Behavioural Economics and Business Ethics

Interrelations and applications

Alexander Rajko

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Behavioural Economics and Business Ethics

Economics and moral philosophy have in recent years been considered to be distinct and separate fields. However, behavioural economics has started to reconcile various aspects of morality and economics, which has offered new conceptual opportunities to advance economics ethics and business ethics.

This book aims to advance economic ethics and business ethics by combining normative principles and empirical evidence grounded on the key motivational forces in economic decision making. It has three core objectives:

- to assess order ethics as a theory of both economic ethics and business ethics, using behavioural economics methods and evidence;
- to duplicate cardinal virtues for modern business ethics;
- to set up valuable guidelines for the implementation of economic ethics and business ethics.

Alexander Rajko is Assistant Professor at the University of Cologne, Germany.

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1 Introduction, motivation and methodology

Originally, economics has emerged as a subdiscipline of philosophy with the seminal works of Adam Smith.[1] Shortly after Bentham's conception of utilitarianism as a primarily ethical theory, it was adopted and axiomatised by the upcoming economic science.[2] Ever since, the theory formation in economics has made vast progress, but it has also lost touch with its original foundations in moral philosophy. Analogously, ethical theory has long ignored the moral implications of economic theory and economic agency. Only during the last decades has this separation been critically addressed, and unifying frameworks of economic ethics and business ethics devised. These efforts try to overcome the unnecessarily strict dichotomy of ethics and economics. However, economic ethics and business ethics still rely on neoclassical economics to a great extent, which is based on efficiency, full rationality and self-interest. These assumptions have never offered a realistic representation of human nature. Now, behavioural economics offers an alternative account, where the key assumptions of the neoclassical paradigm are relaxed. This means discussing alternative rationality conceptions, mitigating strict individual self-interest and dispensing with narrow-minded efficiency. Behavioural economics provides both new theory and evidence to overcome this oversimplified account of human agency. Furthermore, by incorporating psychological insights, the long standing claim that any kind of moral philosophy presupposes "an adequate philosophy of psychology"[3] can finally be met with behavioural economics.

This thesis is motivated by the recent progress in behavioural economics and aims at utilising the respective insights for the advancement of economic ethics and business ethics. Based on this undogmatic and empirically oriented description of human behaviour, ethics in general, and for the scope of this book, business ethics and economic ethics can be reassessed. This means discussing the normative ramifications of behavioural economics for both business ethics and economic ethics. A related discussion has already been started with the works of Nobel laureate Amartya Sen, who has tried to find a closer relation between utilitarianism, contractarianism, social choice theory and neoclassical economics.[4] Similarly, Binmore argues that ethical theory needs to be revised on the basis of game theory and behavioural economics, because otherwise it is based on wrong assumptions of human motivation.[5] In accordance with these insights, this book

sets out from the conviction that economic ethics and business ethics can be aligned to their imperatively microeconomic theory foundation, which is currently most advanced in behavioural economics. Order ethics is a theoretical approach to economics and business ethics, which is pivotal to this book. Regarding economic ethics, only order ethics is considered whereas for business ethics, concepts such as virtue ethics, corporate value codes and corporate social responsibility are taken into account. Order ethics stands in the tradition of neoclassical economics, but also draws from new institutional economics. In addition to these two paradigms this book aims at relating order ethics to the new concepts and theories emerging with behavioural economics. First of all, this aims at re-establishing it on the grounds of behavioural economics as an additional modern economic foundation. Second, this relation can also help to advance some aspects of order ethics theory. And finally, due to the empirical foundation of behavioural economics it serves as a guide for the implementation of economic ethics and business ethics. Here it can reinforce already discussed means of implementation by virtue of additional experimental evidence and also it can provide new approaches for successful implementation. Overall, this book pursues three main ends. The first end is an assessment of economic ethics by means of behavioural economics methods and evidence; this addresses the scope of cooperation (Chapter 3), the conception of rationality (Chapter 4) and the impact of fairness (Chapter 5). Second, some cardinal virtues for modern business ethics are deduced on the basis of behavioural economics (Chapter 6). Finally, the implementation of both economic ethics and business ethics is discussed on the grounds of economic theory and behavioural constraints (Chapter 7).

Regarding the first end, order ethics has so far only focused on some standard assumptions of ethics, which are mainly utilitarianism and social contract theory, neoclassical economics and institutional economics. Accordingly, efficiency, instrumental rationality and self-interest can be reassessed on the basis of behavioural economics. First, the concept of *cooperation* is an integral part of moral actions and economic exchanges. From the economic point of view, cooperation is mainly about strategic advantages, which can best be analysed by means of game theory. A game theoretic analysis still relates to the social contract tradition of order ethics. Then with regard to *rationality*, the current state of research in behavioural economics has appraised full rationality as too demanding and unrealistic. Therefore the concept of bounded rationality has been established and various theories of how to it works are still discussed. These theories are put into perspective with order ethics. In particular, strategic rationality can be perceived as an account which is naturally consistent with order ethics and behavioural economics. As a third theme order ethics is related to *fairness* research in behavioural economics. Here theories of distributive justice and models of social preferences can be considered from a social contract perspective and from the behavioural economics point of view. Social preference models are the behavioural counterpart to self-interest. Moreover, reciprocity and procedural fairness are shown to play an important role in the understanding of economic agency.

This combination of research streams can generally help putting the normative theories of distributive justice on an empirical foundation.

The second end of finding *cardinal virtues* of modern business ethics combines behavioural economics analysis with ancient and contemporary virtue ethics. The analysis starts with making a case for the suitability of virtue ethics with business ethics and giving an overview on currently discussed virtues. The identification of cardinal virtues must then be conducted under the constraint of compatibility with behavioural economics laws and evidence.

Finally, the third end of this book is the implementation of economic ethics and business ethics. Again behavioural economics and to some extent standard economic theory serve as a guideline for a realistic scope of applied ethics in the fields of economics. For economic ethics, that takes up institutional design, economic mechanisms, contracts and incentive schemes. With business ethics the focus lies on corporate value codes, the instrumentalisation of bounded rationality and corporate social responsibility.

1.1 Pluralist methodology: ethics and behavioural economics

Only recently, economics and ethics have reconverged to their common roots. So economics is increasingly concerned with moral issues and ethics increasingly applies economic tools such as game theory to formalise moral problems. Combining both streams, the main innovation for the arguments in this book is derived from the new field of behavioural economics. However, discussing the interrelation of economic ethics and behavioural economics involves various methodologies related to these fields. Thus following an interdisciplinary approach the relevant literature is taken from neoclassical economics, behavioural economics, experimental economics, game theory as well as ethics, business ethics and economic ethics. Therefore the main methodologies can broadly be classified into the three realms of ethics, economics and social psychology.

For the scope of this book, the area of *ethics* is concerned with some classical ethical theories, economic ethics and business ethics. In this regard, classical theories provide the rigorous basis for the investigations. Moreover theories of contractarianism are conveyed, as they form an elementary basis for the functioning of economics and can easily be translated into a game theoretic framework. For the further investigations in this work, order ethics is taken as the central theory of economic ethics, which also accounts for a subsidiary layer of business ethics. *Economics* is relevant as neoclassical economics provides the basics for most current accounts of economic ethics. Furthermore, it entails decision theory and game theory as analytical tools for the understanding of behavioural economics. Game theory, especially, offers a useful framework for formulating ethical problems with some formal rigour. Finally, the main innovation for the arguments in this book will be derived from the new field of behavioural economics, which provides new assumptions and models regarding human behaviour. *Social psychology* is mainly a supplementary field but nevertheless important. It offers the basics of experimental methods. This method is the

consequential connection of game theory and behavioural economics. Social psychology also gives input to the upcoming economic theories of cooperation, bounded rationality and fairness.

After having introduced the necessary disciplines for this book, the relation of positive and normative research needs to be discussed. Economists usually understand themselves doing positive science and thus neglect normative issues. Nevertheless, they use normative concepts such as full rationality and efficiency for their central assumptions. As the example of rationality shows, normative concepts are a useful starting point but must be open to falsification and adaptation based on positive research such as experiments. Thus behavioural economics provides a well-founded basis for a fruitful discussion and reformulation of normative theories, especially economic ethics and business ethics. In this vein, a discussion of the relation of ethics with experimental economics has just been started.[6] The research methodology used in this book combines both normative and positive methodology. The successful interplay of both paradigms, especially based on experimental evidence, has already been proven in the literature.[7] Altogether, morality should yield lasting economic benefits in order that it can be implemented.

1.2 Research hypotheses and book outline

So far it has been argued that this book is motivated by progress in behavioural economics. Consequently, the required research methodology has been elaborated and behavioural economics has been put in the context of ethics, economic ethics and business ethics. This identifies the four central cornerstones of this investigation, i.e. cooperation, rationality, fairness and virtues. Based on these findings and again drawing from behavioural economics, the implementation of economics ethics and business ethics is addressed. Overall the book at hand is composed as depicted in the framework of Figure 1.1.

In the following, the six main chapters (2–7) are illustrated in some more detail and the central research hypotheses are outlined.

Chapter 2: Economic ethics, business ethics and behavioural economics

To address the main theme of this book, some of the most prominent theories in philosophy and economics have to be taken in account, because "on any theory, our view of what ought to be must be largely derived, in details, from our apprehension of what is."[8] Pertaining to classical ethics this mainly comprises utilitarianism and social contract theory. More attuned to the objectives of this book, economic ethics and business ethics are also introduced.

On the side of economics the new field of behavioural economics delivers the main input in form of data, methods and theories. Since the theoretical basis for the new paradigm of behavioural economics strongly relies on insights from decision theory and game theory as the means for analysing decision making

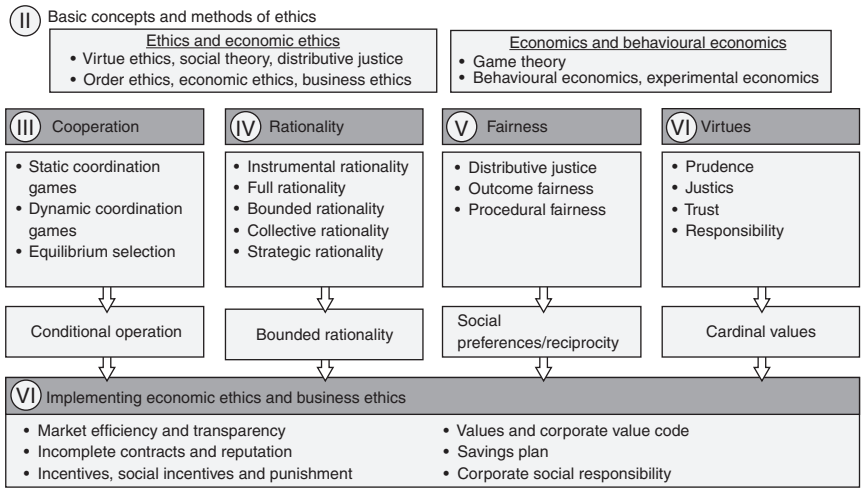

Figure 1.1 Book outline.

under uncertainty, these methods are briefly introduced. Game theory considers strategic interactions as typically observed in economic contexts. Moreover, it has also already been applied to ethical theories. Finally, the discussion of ethics, economic ethics, game theory and behavioural economics exposes the normative implications of actual research in behavioural economics and entail ramifications for economic ethics and business ethics.

Chapter 3: Cooperation in economic ethics

Cooperation and exchange are the central mechanisms underlying economics and economic behaviour. The structure of cooperation can best be formalised and analysed by means of game theory. However, it is very difficult to find the appropriate games giving a precise representation of economic reality. When considering order ethics, it becomes manifest that this theory puts a strong focus on the standard prisoner's dilemma and its specific incentive structure. Hence, to what extent this game can represent economic behaviour must be discussed, as well as what other game might become suitable extensions to the order ethics body of theory. From a more technical perspective, order ethics is currently restricted to equilibriums based on the criterion of Pareto-efficiency and the standard Nash equilibrium concept in pure strategies. Hence order ethics can find an expedient extension by accounting for other concepts such as risk-dominance, focal points and trembling hand perfection, which allow for more diverse equilibriums. Similarly, dynamic games are another suitable extension for order ethics. Dynamic games are, generally, the more accurate description of real economic encounters, and they exhibit reciprocity as the central empirical foundation for cooperation. Moreover, they serve as the basis for reputational effects and social punishment options.

Chapter 4: Rationality in economic ethics

The analysis of order ethics continues with a discussion of various rationality conceptions, which intimately connects ethics, economics and psychology. Whereas psychology is classically concerned with the cognitive limitations underlying rationality, economic theories explicitly model rationality and more recently bounded rationality. In deviation from the assumption of ethical theories, bounded rationality relaxes assumptions regarding the cognitive power of decision makers to gather full information and to perfectly weigh off all possibly resulting alternatives. With recourse to experiments, it can be corroborated that bounded rationality is capturing actual human behaviour and its limitations more correctly than instrumental rationality in classical ethical theories or full rationality in neoclassical economics. So the first central question in this chapter needs to be how economic ethics is affected by the assumption of bounded rationality. Alternative concepts of rationality such as collective rationality and strategic rationality are put in perspective with order ethics.

Chapter 5: Fairness in economic ethics

During the last 20 years behavioural economics has investigated different concepts of social preferences as an alternative behavioural foundation to strictly self-interested individual preferences. This strongly relies on experimental evidence and entails various conceptual explanations for social preferences, which currently focus on fairness,[9] warm glow altruism,[10] true altruism,[11] spite,[12] intentions[13] and trust and reciprocity.[14] With regard to ethics the idea of outcome fairness relates to theories of *distributive justice*, which also deal with the fair allocation of goods in a society. Therefore, the *fairness of outcomes* has always been an important interface of economics and ethics. The economic investigation of outcome fairness has started with the first experimental ultimatum game. Then Kahneman and Tversky conducted their studies on moral constraints for profit seeking.[15] Taking up this idea some influential formal economic models have been developed, discussed and enhanced. So ethical pondering has influenced economics and, vice versa, economic behaviour is at least partially shaped by morality. Furthermore, *procedural justice* and *procedural fairness* are likewise a venue for ethics and behavioural economics. In this regard, reconciliations of procedural fairness and the economic decision-making process have been proposed in the literature. Concerns for procedural fairness also encompass themes such as opportunism, possibility of punishment, accountability, transparency and active deception. So it can even be claimed that intentions, and not outcomes, are the key to understanding perceived economic fairness. The main question in this chapter remains how economic ethics, i.e. order ethics, is affected by positive pictures of economic behaviour exhibiting fairness as an integral part of economic agency.

Chapter 6: Business ethics based on virtues and behavioural economics

Business ethics usually assumes that economic behaviour is purely based on self-interest and thus conflicts with standard accounts of ethical theory. But whilst neoclassical economics has its foundations in utilitarianism and narrow optimisation, I argue that the new field of behavioural economics is naturally attuned to a virtue ethics base. The following analysis of cardinal virtues of business ethics starts with an analysis of current virtues advocated in business ethics. Reviewing the literature narrows this down to courage, temperance, prudence, justice, trust and responsibility as the main virtues. This selection is then assessed in terms of its compatibility with behavioural economics. As a result, prudence, justice, trust and responsibility can be maintained as the four cardinal virtues of modern business ethics. This also proves the initial hypothesis of virtue ethics as being a very suitable foundation for business ethics.

Chapter 7: Implementing economic ethics and business ethics

Chapter 7 of this book draws on the previous findings from the relationship of ethics, economic ethics and behavioural economics. In particular, it extends the scope of these insights to the practical implementation of ethics. For the implementation of economic ethics the general interplay of institutions, rules and incentives is analysed. This requires some elementary considerations of market efficiency and transparency. Incomplete contracts are reconsidered as a standard implementation mechanism in economics and order ethics. Then reputation and incentives as additional economic forces are integrated in the institutional framework of order ethics. At last, the design of incentives as a key feature of order ethics is related to behavioural economics, which imposes a crucial asymmetry between positive incentives and negative incentives. The design of incentives is also supplemented by highlighting non-monetary social incentives as another suitable means. For the implementation of business ethics moral virtues are linked with values and corporate value codes. Then prudence is taken up and related to bounded rationality. Here the design of saving plans is illustrated as a practical example for materialising some insights from behavioural economics. Finally, responsibility as the foundation of corporate governance and corporate social responsibility is discussed.

2 Economic ethics, business ethics and behavioural economics

> *Every individual endeavours to employ his capital so that its produce may be of greatest value. He generally neither intends to promote the public interest, nor knows how much he is promoting it. He intends only his own security, only his own gain. And he is in this led by an invisible hand to promote an end, which has no part of his intention.*
>
> (Adam Smith)

This chapter starts with an overview on ethical and economic theory. For ethics it relates some main classes of theory, i.e. virtue ethics, utilitarianism and contractarianism. Concerning economics the focus is on microeconomics and game theory. Then the important distinction between economic ethics and business ethics is highlighted and related to the current literature. Moreover, order ethics is illustrated as a well-established interface of ethics and economics. This theory is then related to the central theme of this book, i.e. behavioural economics including game theory and experimental methodology.

2.1 Virtue ethics, utilitarianism and the social contract

Generally speaking, ethics is concerned with judging human conduct according to rightness and wrongness or goodness and badness.[1] The ethical tradition builds the foundation for economic ethics. Thus a brief introduction in ethical theory is given, as far as it interrelates with economic ethics. This starts with a short history of ancient ethical theory and then touches on the central theories of utilitarianism and social contract theory.

Historically, morality has always been one dimension of human cooperation. The term goes back to the Latin word *moralis* which translates as customs in a group. Ergo morality is a very wide concept including pagan and religious morality. The systematic philosophical investigation of morality is usually denoted as ethics. Henceforth, the common understanding of the term ethical theory as a synonym for moral philosophy is assented.[2] The first systematic treatment of ethics was already touched in pre-Socratic times, but it was not until the works of Socrates, Plato and Aristotle that it was investigated in a more

structured manner.[3] Aristotle especially can be said to be the founder of the independent discipline of ethical thinking. He was the first to recognise that agents should only be accountable for their voluntary actions.[4] Along these lines, only voluntary actions can be subject to moral scrutiny and judgement. More generally, ethics is usually based on two cornerstones: a theory of right conduct and a theory of value.[5] The most influential ethical author in the Middle Ages was Saint Thomas Aquinas who still relied on much of the Aristotelian doctrine.[6] Only around the time of the Enlightenment did ethics seriously proliferate with the works of Hobbes, Locke, Kant and others.[7] From then on the field can be classified in the following three main streams:

1 Virtue Ethics
2 Deontology and Social Contract Theory
3 Consequentialism.

Virtue ethics is the most ancient class of theories still discussed. It takes the human character as a starting point.[8] Then it defines the virtues of the individual to act in accordance with morality. Along the same lines deontology focuses on individual duties and rights.[9] A very important subdivision of deontology is found in theories of the social contract, i.e. contractarianism.[10] Contractarianism is a metaphor for the origin and evolution of the respective duties. Finally, for consequentialist theories morality only relies on the outcomes of actions. Thus it dispenses with the centrality of the individual perspective and also blinds out unobservable factors such as intentions.[11] The most prominent account of consequentialism is utilitarianism, which is also the ethical theory most related to economics. In the following, virtue ethics, utilitarianism and social contract theory as the most central approaches for the scope of this book, are presented in some more detail.

2.1.1 Virtue ethics

In the course of history different *values* or *virtues* have been taken as the ultimate ends of ethics.[12] Virtue ethics has been the source of moral theory as first established by Plato and then more comprehensively by Aristotle.[13] For him *eudaimonia* is considered the most basic and necessary good.[14] The term can best be translated with the modern concepts of "flourishing", "happiness" or "well being".[15] To Aristotle virtue is necessary, but not sufficient to achieve *eudaimonia*. Virtue ethics accordingly focuses on the individual character traits. This becomes self-evident, when considering that the term "ethics" was coined from the Greek *ēthikos* which literally means character. Virtues are dispositions of character which are used to accept or reject certain actions on the basis of ethically relevant criteria.[16] Thus virtue ethics emphasises the individual character to govern decision making and behaviour. Moreover, virtues can be defined as dispositions to pursue a certain good.[17] The most accepted and time invariant cardinal virtues are: prudence, temperance, courage and justice.[18] Value theory

in the broader sense is often directed to one superordinate objective such as: *eudaimonia*,[19] "social utility",[20] "peace",[21] "pleasure and freedom of pain",[22] "liberty"[23] or "freedom".[24] This line of theories had been dominant until the Enlightenment, when more formal accounts of ethical theory emerged, i.e. deontological and consequential theories. Nevertheless, there are some contemporary approaches to virtue and value ethics.[25] The attractiveness of virtue ethics at all times is rendered by its independence from individual cases and thus from some particularly challenging moral dilemmas. Whereas the other theories get easily entangled in singular problems and get lost in relativities, making a clear decision and advice very difficult, virtue ethics relies on its strict principle that ethical behaviour only needs to be in accordance with a predefined set of personal virtues.

Recently virtue ethics has regained a lot of popularity.[26] However, the most important virtues have not changed since the ancient Greeks. For example, Foot still insists on courage, temperance, prudence and justice as the cardinal virtues of modern times.[27] In particular, the modern accounts of virtue ethics allow for an integration of ethics with other social sciences such as economics.[28]

2.1.2 Social contract theory

The philosophical notion of social contract theory goes back to the seminal work of Thomas Hobbes in 1651 and is based on the ideal of mutual self-interests.[29] As Hobbes, Locke also employs the idea of the original position or natural state as the starting point of his argumentation.[30] It is additionally inspired by Rousseau's general will, which executes the will from an impartial perspective of free and equal citizens.[31] Contractarian approaches in general focus on some consent to establish principles for the judgement of actions. This makes it very suitable for assessing the organisational issues within business ethics.[32] The contractarian consent is hypothetical in nature and used to justify normative principles and policies.[33] Hence social contracts can justify their normative appeal by means of implicitly reciprocal behaviour. Altogether, contractarianism describes binding agreements one would make with respect to the equal moral status of all agents and rational behaviour. Thus it is subject to the anthropological assumption that moral agents want to justify their behaviour or principles to others. Also, most contractualist theories implicitly agree on the necessary values of freedom, equality and rational agency. Contractarianism is a main rival of utilitarianism. It manifests the content and justification of morality for a social group. Thereby it does not contradict deontology, but respects the Kantian ideal of never treating people as mere means, but always as ends in themselves.[34] In general, contractarianism constructs principles that can elegantly balance diverse individual interests.

The original Hobbesian idea of mutual self-interests is most prominently continued in the contemporary works of Gauthier.[35] His account makes extensive use of game theory and bargaining theory.[36] Thus he tries to reconcile his account of social contract theory with basic economic mechanisms. Moreover,

Scanlon devises another modern contractarian theory, which resembles Kant's notion of the categorical imperative. He formulates: "An act is wrong if its performance under the circumstances would be disallowed by any set of principles for the general regulation of behaviour that no one could reasonably reject as a basis for informed, unforced, general agreement."[37] Scanlon builds on Kantian thought, but bases the normative foundation of his own theory on the principle of mutual respect. Finally, the momentarily most influential application of the contractualist framework can be found in Rawls's *A Theory of Justice*.[38] Rawls tries to substantiate his position with a general criticism of utilitarianism which ignores the individuality of people and the differences in their assessments.[39] In contrast to Scanlon, he not only wants to mark principles no one could reject, but principles everyone has to rationally agree upon. Therefore he builds his theory on a hypothetical "veil of ignorance", which embodies his liberal commitment in form of a neutral position, caused by uncertainty.[40] This results in a "reflective equilibrium", where two principles of justice are imperative: the liberty principle and the difference principle. The difference principle is based on a MaxMin criterion and thus opposing the standard economic end of Pareto-efficiency.

In the field of economic and business ethics, contractarianism is very popular, too. So some authors investigate the evolution of moral norms with focus on economics on the basis of social contracts.[41] In addition, some influential approaches to business ethics apply contractarianism as the basic framework for structuring their theories.[42] Most importantly, Binmore argues that ethical theory needs to be revised on the basis of game theory and behavioural economics, because otherwise it is based on wrong assumptions of human motivation.[43]

2.1.3 Utilitarianism

Utilitarianism is the most important case of a consequentialist theory. The idea of utilitarianism might be traced back to the works of Hobbes. But Jeremy Bentham was the first to come up with a comprehensive theory. First refinements and alternatives have then been proposed by Mill and Sidgwick.[44] Utilitarianism also provides the behavioural underpinning of economic decisions, which revolves around the central concept of utility.[45]

Utilitarianism is solely judging actions based on their consequences in terms of suffering and well-being, which can both be expressed as a function of utility. Thus it is focusing on the assessment of outcomes.[46] Hence it is in sharp contrast to deontological positions, which focus on the rights and duties of individuals. And it is in contrast to virtue ethics, which is concerned with the intentions and character of a moral agent. Moreover, utilitarianism tries to overcome some problems of ancient ethics with its central concept of aggregation of utilities. Aggregation is also the concept of resolving conflicts and assessing individual aims, when in conflict with other individuals. Within utilitarianism there is a distinction of schools according to which forms of consequences are to be considered and which have priority. So, actual, foreseen, foreseeable, intended or likely consequences can be the basis of moral judgement.[47] A conceptual

problem of utilitarianism can be the little value that is attached to the individual.[48] Hence there are some non-trivial dilemmas for utilitarianism which requires an agent to kill some or let someone die, just to save a greater number of other individuals. Especially when accounting for social ties, these demands are counterintuitive and repulsive. Moreover, it has to deal with the technical problems of finding the right measures for utility. As a result, there is a debate about whether utility can be measured on a cardinal or ordinal scale. Whilst an ordinal scale is sufficient for making individual judgements on the basis of the utility calculus, cardinal scales are necessary for any interpersonal aggregation of utilities.[49] So from a technically and economically sound perspective utilitarianism is conceptually limited, as it cannot give clear advice in situations with more than one individual. Based on the less rigid but more realistic assumption of cardinal utility, different levels of utility cannot be settled with one another.

As argued, utilitarianism and contractarianism are two fundamental ethical theories relating to business and economic ethics. Contractarianism focuses on the individual's position and does not try to aggregate any states or utilities. Thus it circumvents the utilitarian problems of ordinal utility, cardinal utility and interpersonal aggregation of utilities. Moreover, contractarianism is more flexible than utilitarianism as it allows for any concept of central value. Whilst utilitarianism is bound to the assessment of outcomes in terms of utility, contractarianism is open towards any justification, which can be argued to be in mutual interest.

2.2 Economics, economic ethics and business ethics

In the following section the relevant basics of economic theory are laid out. Then it is argued why normative economics does not suffice as an ethical theory and hence an additional theory of economic ethics and business ethics is necessary. Based on this finding, economic ethics and business ethics are outlined and related to the theory of order ethics, which is central to the further investigations.

2.2.1 Foundations of economic theory

From a philosopher's point of view in the Western tradition, the pondering about economic issues can be traced back to Aristotle, who was already concerned with the efficient "management" of the household.[50] During the Middle Ages the foremost economic concern relating to ethics was the morality of charging interest.[51] But the inception of a more formal economic theory has only started in the eighteenth century with the works of Adam Smith.[52] Furthermore, the key assumptions of neoclassical economics also go back to John Stuart Mill who defined political economy as only being concerned with the pursuit of wealth and thereby dispensing with all other motives of human behaviour.[53] Economics deals with the production, exchange, distribution and consumption of goods. Therefore it can be defined as the science of exchange, which includes the

elements of interaction and the institutions governing the interaction.[54] Consequently, the microeconomic theory relevant to economic ethics focuses on the human decision-making process, some basic economic institutions and issues of welfare and efficiency as the most natural target variables for maximisation.[55] The combination of decision making and interaction renders game theory as one of the most powerful tools of modern economics.[56] In theory, the process of decision making is based on utility functions, uncertainty, individual risk attitude and institutions. These are the cornerstones for decision theory, game theory and ultimately most economic models. Hence some basic definitions are established in the following.

Utility is the most basic concept of analysing economic decision making. In economics utility is often defined as "revealed preference", that is one assumes that whatever one chooses is based on conscious or unconscious preferences rather than pure contingency.[57] On the basis of ordered preference a utility function can be constructed to formalise economically relevant predispositions. For the application of utility theory it is only required that decisions are consistent.[58] They do not have to be justified. The most important class of utility curves assumes convex preferences. This means that economic agents prefer to diversify their consumption bundles instead of just buying the maximum amount of one good, as the marginal utility derived from one good decreases with its quantity.[59] The main input to an utility function are the preferences of an agent. In this regard the central claim is that preferences are *ceteris paribus* constant.[60] So unless there are changes in the available information, there is no reason to reassess preferences and no reason to change one's preference ordering.[61] Speaking about the cognitive or behavioural side of decision making, the capability of decision making is constituted by the three basic processes: understanding, appreciation and reasoning. Clearly, understanding is the most basic of the three elements as it is required for every following cognitive task.[62] Second, decision makers must learn to appreciate the nature and the meaning of their available alternatives.[63] Third, reasoning is the intellectual capacity to rationally aggregate information based on preferences and derive conclusions and ultimately decisions.[64] The crucial point is that a decision maker can recognise his own preferences and grasp the true consequences of his decisions. Nevertheless, in reality *uncertainty* is unavoidable in most decision-making contexts, as information is limited and especially long-term consequences cannot always be predicted. So most practical decision scenarios involve uncertainty to some degree. Thus it is necessary to model the environmentally determined uncertainty as some probability. These probabilities can be discrete or continuous, but must comply with the three Kolmogoroff axioms.[65] Based on these, the addition theorem and Bayesian updating can also be applied.[66] According to probability theory, people do their best to anticipate and estimate uncertainty of consequences. *Risk attitude* is a crucial concept to understand human decision making. It is one of the most basic concepts of economics and best explained with reference to simple lotteries.[67] Risk neutrality is the standard assumption of neoclassical economics. It states that a decision maker is indifferent between a

gamble yielding a 50:50 chance to gain either 0 or A as a pay-off and a certain payment of A/2. In this case the certainty equivalent of A/2 is identical to the expected value of the gamble. However, risk aversion is prevailing for accepting all certain payments <A/2 over the lottery and risk proclivity means only preferring payments >A/2 over the lottery. Testing for risk attitude in experiments shows that almost all decision makers are risk averse in most situations.[68] Moreover, standard economic theory assumes constant risk attitudes. This is the risk attitude for a decision is fixed and does not depend on the decision at hand or interaction with others. *Institutions* are formal rules and mechanisms, which can be designed to promote some end. The most basic economic institution is the market. Based on this institution, the most central concept of microeconomic theory is the equilibrium. The equilibrium is a stable state where for example supply and demand meet after several adaptation processes. The underlying interactions can be explained by having a closer look at the human decision-making process and trying to break it down in economic concepts. This is formally studied by the discipline of game theory, which will be presented and used throughout this book. The centrality of decision making is a feature shared by both economics and ethics. More specifically, in the economic paradigm individual decision makers expose full rationality and strict utility maximisation. This is a simplified understanding of human anthropology in economic contexts and hence the key assumptions of the neoclassical economics paradigm are challenged in this book.

2.2.2 Normative economics and welfare

Positing economics as a science without any normative content is a popular shortcoming, since there is a branch of normative economics solely concerned with social welfare and its maximisation. Therefore the scope and limitation of normative economics are pointed out, before then economic ethics and business ethics are defined.

A lot of confusion in the ethical literature is due to the misunderstanding that economics is solely concerned with self-interested profit maximisation. Strictly speaking, economics is about the value-free maximisation of allocations. That does initially exclude normative concerns, but does not prevent normatively sound target variables. Apart from profit in pure business contexts, efficiency and welfare are usually advocated as the ends of economic optimisation. In the view of utilitarianism, utility must not be confused with monetary profits only.[69] Within economics, normative economics is the subdiscipline coming closest to ethics. Therefore it seems appropriate to discuss the potential of normative economics, before developing an independent theory of economic ethics. Normative economics is based on the maximisation of social welfare.[70] Putting it into economics terms, social welfare is usually understood as Pareto-efficiency. This is defined as any distribution D, where the distribution of utility cannot be improved without making one player worse off.[71] Accordingly the first welfare theorem states that all Walrasian equilibria are also Pareto-efficient.[72] The

concept of Pareto-efficiency separates the world in inefficient distributions and efficient distributions.[73] Consequently, the theory of social choice relates to Pareto-efficiency.[74] As already outlined, it is thereby based on formal axioms found on expected utility theory. Moreover, welfare economics tries to overcome the problem of social choice and individual values.[75] This means uniting welfare, ethics and a concept of cardinal utility.[76] In this vein public choice theory has to resolve problems of moral hazard,[77] free-riding[78] and how to assign efficiency losses in a collective setting.[79] Nevertheless, Pareto-efficiency is still a prima facie measure for utility in economics and economic ethics. Further, the claim of welfare maximisation seems to be in line with the positive picture of human nature and decision making, as argued by Becker: "Individuals maximise welfare as they conceive it, whether they are selfish, altruistic, loyal, spiteful or masochistic. Their behaviour is forward-looking and it is also assumed to be consistent over time."[80] Modern economics has even tried to expand the welfare definition from utility to measures such as life satisfaction.[81] However, from an ethical perspective Pareto-efficiency implies that in the fully rational system of economics there exists neither benevolence nor malevolence.[82] This seems to be a very inaccurate description of observed human behaviour. Therefore I will come to a richer and more accurate description of economic agency in the next chapters.

In summary, normative economics is solely concerned with achieving Pareto-efficient states. Accordingly, as neoclassical economics only allows for the efficiency principle it acts as a morally neutral science. However, it is obvious that for an efficient functioning of markets a minimum of morality, e.g. mutual trust, is necessary to govern the exchange of goods and services.[83] Since the very emergence of the first businesses and markets, these have always been complemented with regulating counterparts such as independent institutions, political authorities or legislative intrusion. In fact, economics as a science was originally conceived as political economy and thus showing a strong concern for normative issues. Only later on, it evolved into a rather technical and analytical discipline of the social sciences. But, science in general and especially applied sciences such as economics, which are actively involvedin policymaking cannot only be neutral theories.[84] In shaping the world's institutions, markets and welfare, economics has to account for the respective moral implications.[85] And as economics does not match this demand any more and as ethics is not primarily concerned with economic reality, an independent theory of applied ethics such as economic ethics or business ethics is necessary.

2.2.3 Economic ethics and business ethics

After the separation of ethics and economics since Adam Smith, there has been no noteworthy cooperation of these two now separate branches for a long time.[86] But in 1955 the Nobel Laureate Harsanyi took up the common history and started a series of publications on the modern relation of ethics and economics.[87] He tried to reconcile concepts of classical economic theory with utilitarianism,

based on a discussion of ordinal and cardinal utility. But in discussing ethics and economics Harsanyi did not challenge the strong rationality assumption in either discipline, as he still relied on traditional game theory. Similarly, Sen pursued the connection of ethics and economics in his works.[88] However, he also considered modifications of the rationality conception employed by economics.

After these first combinations of economics and ethics, the literature shows that economic analysis is frequently applied to moral philosophy.[89] As a matter of fact, the results of economic transactions are usually determined by a set of rules governing the interaction.[90] Hence an analogy between games and economics systems is very helpful. Both are social artefacts where the fundamental rules are subject to discussion and change.[91] The most recent and pertinent account of using game theory to investigate the evolution of morality can be found in Binmore's later works.[92] Some key concepts of economic theory such as "moral hazard" explicitly point out the moral dimension of economic actions. But economics and normative economics do not integrate moral necessities into their bodies of theory. In the following chapters, one will see that this should more precisely mean: economics and normative economics cannot yet integrate moral necessities into their body of theory, as approaches of behavioural economics try to account for morally founded facts such as social preferences and altruism. Maybe at some point, ethics and economics will become reunited, on the basis of economic models which can incorporate moral behaviour and moral norms. However, for this book contemporary theories of behavioural economics reconciling ethics and economics are presented as the potential basis for the implementation of ethics in the economic sphere. This is independent from how much intersection of ethics and behavioural economics there really is, in particular the line of argument does not rely on an overly altruistic interpretation of economic theory. It only assumes an existing interrelation of ethics and behavioural economics. Thus the economic insights are discussed and their impact on ethics, especially in the economic context, is determined.

Based on this main objective, the first crucial distinction has to be made between business ethics and economic ethics. Business ethics is the more popular concept, which is well established in the Anglo-American literature on applied ethics. It is focused on the stakeholders of a business such as workers, managers or the organisation itself, but its recommendations are usually limited to the boundaries of a company. Another layer, so to speak, is that of economic ethics, which focuses on the general rules of an economy rather than individual companies. Whereas business ethics is concerned with incentives to behave morally for the individual, economic ethics aims at establishing incentive schemes and rules to govern organisations. In doing so economic ethics is a more general approach, which might be seen as a first step towards the recently called "unified normative theory of *markets, firms and business practices*".[93]

Economic ethics is hence operating on the more abstract layer of the economy, so consequently the main governing force in economic ethics is politics, which positions it closely to the field of political philosophy. Therefore it is no surprise that there are some central concepts of political philosophy such as

distributive justice, which are also discussed in the realm of economic ethics. One major challenge economics ethics has to face is that even if the rules of the economy are morally sound, there is still the possibility of individuals such as managers ignoring the rules or deliberately violating them. It is a matter of fact that companies build hidden monopolies or agree on illegal price fixing. These misbehaviours are very difficult to address with the rules of economic ethics. The problem lies in the implementation or execution of rules, which is difficult because of the lack of information and the small probability of detection. Therefore business ethics, focusing on individuals, can tackle such misbehaviour more directly.

Business ethics addresses the more practical level of single businesses and individual manager behaviour. It is classified as a field of applied social philosophy.[94] It emanates from the ontological independence of institutions, which are complex entities, but nevertheless characterised by deterministic behaviour. These abstract entities have no scope for morality and thus no direct moral obligations.[95] Accordingly, business ethics focuses on individual values, rights and duties, instead of market rules.[96] The approach is based on the conviction that individual morality of managers and business will aggregate to moral behaviour in the economy.[97] Thus it accounts for the fact that business is both a human and a social enterprise.[98] So economic progress, business progress, individual welfare and social welfare are inextricably linked. The progress in business entails social goods as for instance the supply of employment necessary for individuals as well as additional benefits such as improvements in education.[99] Business ethics can directly support and implement claims of society.[100] And some authors point out that business ethics is potentially a suitable means to increase business profits.[101]

Nowadays, it seems self-evident that every person, even if not directly concerned with business, cannot develop their morality without being at least partly influenced by the businesses in the environment.[102] Even a solitary life like that of Diogenes would require interaction on the individual business level to purchase the basic goods for survival. The interaction of business and ethics is rooted in the participating agents and appealing to their long-term self interests. Thus it is a natural matter of value and virtue ethics.[103] Modern theories of business ethics are often based on virtue or value ethics.[104] Thus they do not ground morality in institutional rules, but rather in the individual character.[105] This capabilities approach reconciles rules with character. So the role of institutions lies in supporting individual virtues, capabilities and dignity.[106] Here the focus is on the individual's moral responsibility. It can be argued that moral behaviour is beneficial to reputation building and thus can promote business ends such as profit. As a consequence ethics has to be forced upon businesses by means of codes of conduct, codes of ethics, corporate governance or laws and regulations. Solomon makes an elegant move to transfer the virtue ethics approach in the realm of business. He argues that being a professional, especially in management, is not about fulfilling a duty of maximisation, but to perform a public service.[107] By the same token, it is often argued that the relevance to managers is the main challenge for business ethics. Hence some authors reproach all theories

of business ethics with being irrelevant to managers, because they are too general, too theoretical and too impractical.[108] Starck figuratively speaks of a "gulf" between managers and business ethicists.[109] All theoretical soundness in an applied field of ethics is futile, when the people in that field refuse to accept or apply the morally necessary conclusions. The problem at hand can be tackled by shaping virtues and values especially motivated for managers and compatible with economic necessities. Therefore the institutions to implement business ethics become accessible to the individual, for example: decision making, internal policies, codes of conducts or incentives guiding employee motivation and behaviour.[110] Thereby business ethics and economics must not be antagonising forces, but rather be perceived as distinctive approaches with the same end and complementary means.

2.2.4 Order ethics based on economic means

I now introduce "order ethics" as an established theory for economic ethics. This theory is based on economic means such as incentives and rules, which are then applied to the moral sphere. Order ethics is focused on economic ethics. However, it also explicitly advocates the necessity of an additional layer of business ethics.[111] This distinction draws on Rawls's distinction between a system of rules and particular actions.[112] It also continues Buchanan's contraposition of "choices of rules" and "choices within rules".[113] Therefore order ethics has a very comprehensive scope for morality in economics and business, which makes it an ideal theory for the implementation of both economic ethics and business ethics. There is a variety of authors involved in the conception and advancement of order ethics.[114] For the scope of this book, I concentrate on the most recent account of order ethics, as advocated by Lütge.[115]

One crucial fallacy of many rivalry approaches to economic ethics is, as already outlined, to start with a dichotomy of economics and morality. Thus these theories need to establish some overridingness of certain ethical claims over normal economic behaviour.[116] Order ethics avoids this fallacy by integrating both morality and economics in the central concept of rules.[117] Thus order ethics strictly distinguishes motivations and outcomes. Establishing rules is also the mission for order ethics for changing institutions by means of incentive design.[118] As I will expand later, institutions and rules can be formalised by means of game theory. In particular non-zero sum games can capture most economic institutions. Order ethics actively endorses its position as a theory for policy changes. Thus it discusses an implementation based on the means of rules and institutions.[119] This focus on rules makes game theory a natural tool for the analysis and discussion of order ethics. Implicitly the theory is based on the assumption that businesses are not directly responsible for ethical issues, since the ethical regulation is implemented on the superordinate layer of economics and economic market rules.[120] Also, order ethics is a functionalist theory of ethics, since it renders morality as a function of maximising profits.[121] Order ethics is built on a wide conception of ethics and sometimes it is argued that it is

more aptly a theory of practical philosophy than a theory of ethics, and it stands in the purely ethical tradition of Hobbes, Hume and Spinoza. It also incorporates elements of practical philosophy in the Aristotelian tradition and can be seen as complementary to the works of Adam Smith.[122] So it focuses on the general conception and centrality of markets and economic exchange.[123] It can also be argued as following Hobbes's minimalist approach to morality, as it tries to establish the social order purely on incentives.[124] Moreover, it obeys Hume's maxim of banning metaphysics and develops a systematic account of ethics.[125] So order ethics does not deal with anthropology, it is solely concerned with the analysis of economic actions.[126] It does not rely on utilitarianism. Instead it is explicitly based on the ideas of social contract theory and consensus.[127] Furthermore, order ethics is non-cognitivist, i.e. claiming that ethical propositions can neither be right nor wrong.[128]

Order ethics dispenses with all theories of individual ethics, since one of its main claims is that these theories must neglect incentive structures at some point, due to their intrinsically moral motivation. Thus focusing on the moral responsibility of the individual virtue and value ethics cannot envisage the morality of the institutional order.[129] Adhering to rules relieves the moral judgement of assessing the motives as in Kantian deontology. As long as the rules of fair business are respected, the intentions could have been malicious without any animosities from the order ethics perspective. In some sense Adam Smith had already rendered motives irrelevant for ethics in the economic context.[130] Here the rules of order ethics apply to all market participants in equal measure without favouring or disfavouring anyone.[131] Hence the neoclassical idea of a Homo oeconomicus is a useful tool for order ethics.[132] Generally, compared to most theories of business ethics, order ethics builds on an economic foundation as it explicitly tries to be consistent with neoclassical economics and new institutional economics.[133] This is a strong assumption from the point of contemporary economics, overcoming the neoclassical paradigm. Hence the relation of order ethics, neoclassical economics and behavioural economics will be a central theme for this book. Moreover, order ethics cannot guarantee the completeness and generality of its own rules. Consequently it is an ethical theory which dispenses with the requirement of universality. Conversely, it relies on continuous evolution and improvements. And finally, globalisation is a fact and for the time being order ethics cannot claim a global reach. This opens the possibility of moral arbitrage, whereby global companies can, for example, dislocate morally forbidden actions according to the local rules in some other country.[134]

In essence, order ethics postulates incorporating market morality in the according rules, because every individualistic approach to economic ethics is susceptible to penalising some agent for behaving morally. Apparently, if violations of morality are beneficial, moral behaviour cannot be stable. This is a feature shared with the concept of Pareto-efficiency, the central criterion for policy changes in order ethics. The theory generally aims at implementing changes only under the condition that everyone benefits.[135] Thus order ethics draws upon normative economics, but surpasses its moral scope, since the Pareto-efficiency criterion is only one

element in the framework of order ethics. Essentially, the whole motivation for economics rests on the idea of mutual advantages and order ethics takes advantage of this fact.[136] Consequently, based on order ethics there is a new branch of this theory emerging which is called "ordonomics" putting the order ethics framework into an even more economic perspective.[137]

2.3 Game theory and ethics

Now I give an introduction to game theory, which will be necessary for the understanding of the following chapters. Therefore the tradition and basics of game theory are outlined. Here the structure of games, solution concepts and some examples for the most central games are presented. Finally, game theory is related to traditional ethical theory in order to discuss its impact on economic ethics and business ethics.

2.3.1 Introduction to game theory

Game theory is the mathematically founded analysis of rational choice with interaction between multiple decision makers. It was devised as a normative model of ideal decision making. The explicit consideration of interaction aspects is its defining difference from decision theory, i.e. the theory of individual rational choice. The foundations of game theory have been laid out in 1944 with von Neumann and Morgenstern's seminal work *Theory of Games and Economic Behavior*.[138] According to their work, game theory can be used for the analysis of general human interactions. The interdependent perspective on choice allows for the explanation and prediction of human behaviour in any context. Moreover, it can encompass both decision making under certainty and uncertainty. A game is fully specified by its rules. Thus every change in outcomes for the participating players is tied to an adaptation of the underlying rules of the game.[139] Nowadays, game theory is a well-established methodology and has been applied to various disciplines, especially in the social sciences such as economics,[140] psychology,[141] sociology[142] and politics,[143] but also in ethics,[144] biology[145] and computer science.[146] It has also recently proliferated into the new fields of evolutionary game theory[147] and behavioural game theory.[148] A classification of the most important classes of games is given in Figure 2.1. First *games* can be distinguished with regard to their structure as static and dynamic games. In static

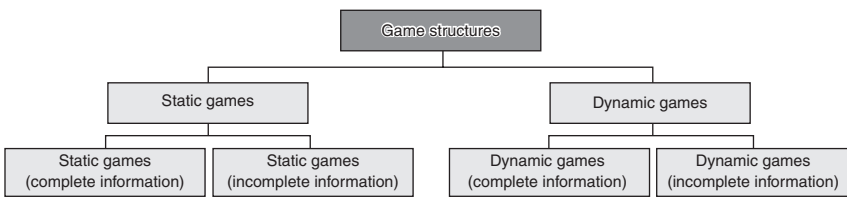

Figure 2.1 Classification of games.

games the players choose their decisions simultaneously. Hence there is no possibility of reacting to the opponent's action within one round of the game.[149] The typical representation form for static games is a matrix and its most prominent example is the classical prisoner's dilemma.

By contrast, dynamic games are characterised by sequential moves of the participating players. This is usually visualised in the form of a game tree. Here the ultimatum game is a prime example of a basic game with sequential character. Accordingly, in dynamic games players can form strategies conditional on expectations of the opponent's moves. Also repeated static games are modelled as dynamic games, where each stage consists of the same game. Repeated games will become a central theme, when discussing ethical theories in the light of game theory. They can become vastly complicated and new computational problems arise for determining the equilibrium in complex games.[150] Here research from computer science on finite automata has proven to be a useful tool. Furthermore, in repeated static games it might be an optimal strategy to vary the strategy in different repetitions of the same game. For example, in public good games there are equilibriums for just contributing to the public good sometimes, which manifests cooperative behaviour in this game. More generally, the repetition of a static game or a sequence of a dynamic game allows for investigations of learning effects and the formation of reputation.

Furthermore, for both static and dynamic games the *informational structure* of the game can be distinguished into complete information and incomplete information. This information can concern the pay-off structure, the rationality of other players or in the case of dynamic games the player types and knowledge of the position in the game and the previous moves. The previous moves also lead to the problem of path dependency which means that for all intermediate decision stages in the game, the final outcome depends on the initial decisions in the game, i.e. which subgame has been reached so far. Incomplete information is also at hand, if a player is uncertain about his opponents pay-off functions.[151] Here probability distributions can describe the uncertain pay-offs. With complete information each player knows the game structure, i.e. pay-offs and strategies for all players. Finally, perfect information is defined that at each move in a game the moving player knows the full game history.[152] This is equivalent to a game structure where all information sets are singletons. The idea of common knowledge formalises what the players in a game know about each other. This is typically the available strategies and resulting pay-offs as well as the rationality of all participants. This concept was originally devised in the philosophical works of Lewis and then later applied to game theory by Aumann.[153] In order to formalise the basic structure of a game the following elements have to be specified:[154]

i players ($i \in N$)
ii strategies available to the players ($s_i \in S_i$)
iii pay-offs or utilities, mapped to a player's strategy ($u_i(s_1, \ldots s_n)$)

Then a game is completely defined in its normal form as $G = \{S_1, \ldots S_n; u_1, \ldots u_n\}$

Moreover, with regard to the *game structure* there are cooperative and non-cooperative games.[155] In cooperative games there is the opportunity of specifying contracts via a third party in order to regulate behaviour during the game. As this is not the case for most critical encounters in an economy, the more interesting case is non-cooperative game theory.[156] Here cooperation is also possible, but must be self enforcing by means of rational strategies. Non-cooperative games can be zero-sum and non-zero sum. In the former, one player's gain is another player's loss, which can be illustrated with the ultimatum game. In the latter, coordination can yield benefits for both players, as for example in the classical "battle of the sexes" game. However, both classes are relevant to economics.

With regard to the *strategies*, there can be pure and mixed strategies. A pure strategy means, according to the definition above, that a player always picks exactly one of his available strategies. But there are games where it might be advantageous to make the opponent believe one might choose more than just one strategy. Then a mixed strategy is defined as a probability distribution p_i over all pure strategies.[157] It must hold that:

$$p_i = (p_{i1},...p_{iK}) \text{ is distributed with } 0 \leq p_{ik} \leq 1 \ \forall k \in K \text{ and } p_{i1}+...p_{iK} = 1 .$$

This includes zero probability for any given strategy, so that pure strategies become an extreme case of mixed strategies. For dynamic games a full strategy has to specify a choice for every stage in the game tree. Thus here a strategy specifies a sequence of conditional choices.

In the following, I give some examples for games which will be taken up throughout this book and illustrate the most popular *solution concepts* for different classes of games (see Table 2.1).

Static games with complete information are tackled with iterated elimination of dominated strategies or the standard Nash equilibrium. Analogously, dynamic games with complete information can be solved by backwards induction which leads to the subgame perfect equilibrium concept.[158] For static games with incomplete information the Nash equilibrium is extended with a probability distribution resulting in a Bayesian Nash equilibrium which relates to the principles of decision analysis and updating probabilities. Dynamic games with incomplete

Table. 2.1 Classification of game theoretic solution concepts

	Static games	*Dynamic games*
Complete information	• Iterated elimination of dominated strategies • Nash-equilibrium • Trembling hand perfectness	• Backwards induction • Subgame perfect equilibrium
Incomplete information	• Bayesian Nash-equilibrium	• Perfect Bayesian equilibrium

information find their extended solution concept in perfect Bayesian equilibriums.[159]

With all these classes of games, multiple solutions, i.e. stable equilibriums can arise. One of the most important, but still often neglected, refinements of the Nash equilibrium is the concept of trembling hand perfection.[160] This introduces an error probability accounting for small mistakes of rationality in the opponent's decision which can sometimes lead to different equilibriums from the original Nash solution.[161] Thus trembling hand perfection can reduce the set of potential equilibriums by sorting out instable ones. In the following, static games and dynamic games with complete information, as the most important classes of games for the scope of this book, are outlined by means of some examples illustrating their functioning and solution.[162]

The normal form of *static games* with complete information and only two players can be represented by a matrix including the players, their strategies and the pay-offs. The classical example for such a game is the prisoner's dilemma as depicted in Table 2.2.

The most intuitive and basic solution concept to static games is the iterated elimination of dominated strategies. Based on the premise of one's opponent's strict rationality, one can outrule certain strategies, which always yield a lower pay-off than the alternatives.[163] More formally a strategy s_i^1 is dominated by another strategy s_i^2 if:

$$u_i(s_1,...,s_{i-1},s_i^1,s_{i+1},...,s_n) < u_i(s_1,...,s_{i-1},s_i^2,s_{i+1},...,s_n)$$
$$\forall(s_1,...,s_{i-1},s_{i+1},...,s_n) \in (S_1,...,S_{i-1},S_{i+1},...,S_n)\,.$$

This means Strategy 2 always has higher pay-offs than Strategy 1 for player *i*. Based on this definition dominated strategies can be identified and discarded as irrational behaviour. Then the remaining strategies can be reassessed and often only a unique strategy for every player is the outcome of this process. This solution concept is based on the implicit assumption that every player is strictly rational and that this is common knowledge to the other players. A serious drawback of this concept is that it fails to reach any conclusive results for many games. This problem has been prominently addressed by John Nash, who made the most important contribution to the analysis of games in 1950.[164] There he defined the concept of Nash equilibrium and proved its existence for a wide class of n-person games. The Nash equilibrium is still the central pillar of game theory.[165] It bases its prediction on best-response functions towards the possible

Table 2.2 Normal form representation of a prisoner's dilemma

		Prisoner 2	
		Cooperate	*Defect*
Prisoner 1	Cooperate	−1; −1	−9; 0
	Defect	−9; 0	−6; −6

actions of an opponent. Thus it is independent of the degree of rationality other players exhibit. So the Nash equilibrium is a set of optimal strategies $(s_1^*, \ldots, s_n^*)$ for all players, which are best responses to any actions of the other $n-1$ players. So it holds:

$$u_i(s_1^*, ..., s_{i-1}^*, s_i^*, s_{i+1}^*, ..., s_n^*) \geq u_i(s_1^*, ..., s_{i-1}^*, s_i, s_{i+1}^*, ..., s_n^*)$$

under the optimising condition:

$$\max_{s_i \in S_i} u_i(s_1^*, ..., s_{i-1}^*, s_i, s_{i+1}^*, ..., s_n^*) \; \forall s_i \in S_i$$

In a theorem, Nash has furthermore proven that for any normal-form game with a finite number of players and a finite number of strategies, i.e. discrete alternatives for strategies, there is at least one Nash equilibrium in pure or mixed strategies.[166] The problem with the classical formulation of Nash equilibrium is that for some classes of games there are many equilibriums, which renders the concept sometimes useless for supporting actual decision making. In such a case, another next level of solution concepts such as focal point theorems is applied. Focal points are cultural or conventional reference points which help to make game theoretic prediction in situations with multiple Nash equilibriums.[167] For example, when two players formally coordinate to meet in a city there are infinite equilibriums where and when to meet. In such a game meeting at the central station of a prespecified city at 12 PM, would be a typical focal point.

The standard representation of *dynamic games* is in the form of game trees, which consist of a starting node and various branches. Each subnode and all the corresponding branches constitute a subgame.[168] According to this definition the whole dynamic game is its own biggest subgame. In case of a dynamic game a strategy must specify an action for each decision in the game-tree,[169] that is, for all possible previous moves a strategy must be specified.[170] The structure of dynamic games can also be used to model repeated static games, e.g. the repeated prisoner's dilemma (see Figure 2.2).

Here the game is repeated once which means each player has to make two decisions.[171] The pay-offs are based on the simple prisoner's dilemma and are just added up on the assumption of having the same pay-offs in both rounds of the game. As this example shows, repeated games facilitate more elaborate strategies, especially as players can condition their behaviour on that of their opponents. The general solution concept for dynamic games with complete information is backwards induction. Starting from the end of the game every subgame is analysed for the optimal strategy of the deciding player. Then on the next stage above, the opponent can make his subgame decision based on the anticipation of the other player's previous rational choice. In the end of this process the equilibrium strategies constitute a subgame perfect Nash equilibrium for every possible subgame.[172] Finally, it needs to be pointed out that from a game-theoretic point of view every non-binding communication in or even before the game is "cheap

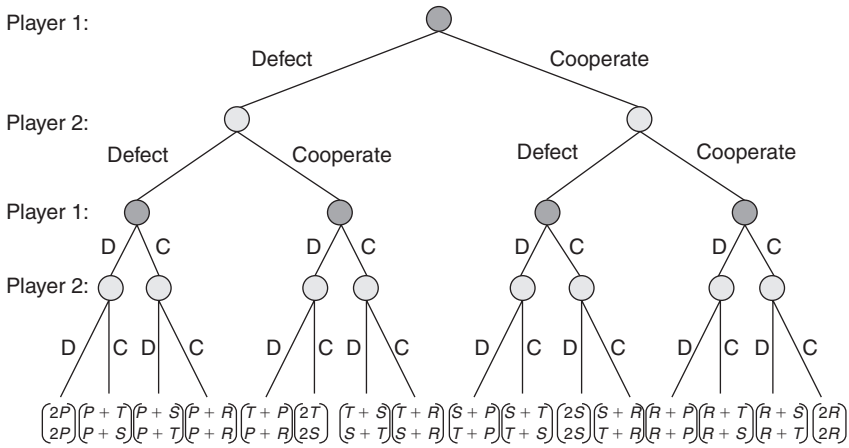
Player 1:
Defect
Cooperate
Player 2:
Defect
Cooperate
Defect
Cooperate
Player 1:
D
C
D
C
D
C
D
C
Player 2:
D C D C
D C D C
D C D C
D C D C
(2P 2P) (P + T P + S) (P + S P + T) (P + R P + R) (T + P P + R) (2T 2S) (T + S S + T) (T + R S + R) (S + P T + P) (S + T T + S) (2S 2S) (S + R T + R) (R + P R + P) (R + T R + S) (R + S R + T) (2R 2R)

Figure 2.2 Extensive form representation of the repeated prisoner's dilemma.

talk".[173] Thus especially all pre-play communication is irrelevant from the game theoretic perspective, since it is non-contractable. Cheap talk has no impact on the pay-off structure of the game and hence no relevance to equilibrium formation. As game theory operates on the assumption of self-interest and rationality there is no reason for the individual to hold promises, which might increase the social pay-off but diminish the individual profit.

In order to prove the point that game theory is not only some mathematical gimmick, the dimension of its real world application in politics and economics is illustrated. Moreover, some more examples for basic games relevant to this book are given and categorised. By the 1960s game theory had already founded a very significant application area during the cold war. At that time new strategic challenges posed by nuclear weapons were analysed by means of game theory in terms of the players' need to communicate and coordinate to avoid mass destruction.[174] In this regard, some early experimental investigations of game theoretic equilibriums have been conducted focusing on the cooperation of player in non zero-sum games.[175] This theme will become more prevailing in Section 2.4, showing how behavioural economics combines game theory and experimental methods. More generally, bargaining was always one of the prime applications for game theory, as the large literature on this topic indicates.[176] The most basic bargaining games, which are also most commonly applied to experimental economics, are the ultimatum game, the dictator game and various gift exchange games.[177] Another important class of games are coordination games such as the prisoner's dilemma, the battle of sexes, the stag hunt game and public good games.[178] Especially interesting is the iterated prisoner's dilemma, as it facilitates more complex strategies, which allow of reputation building, rewards and punishment.[179] Thus it is a richer representation of the real "game of life" and constitutes many different Nash equilibriums.[180] More recently games have been

applied to analyse and formalise the evolution and importance of reputation. Amongst others the basic trust game is still intensively discussed in this context.[181] Another very successful area of modern applied game theory is mechanism design. This discipline is concerned with the analysis and improvement of market rules.[182] A discussion of the implementation of economic ethics by means of game theory will be taken up in Chapter 7. In conclusion, game theory is a mighty tool to analyse best choices in interactive situations with certainty or uncertainty about the behaviour of other players. As it helps to systematise thinking in complex situations, it is also a useful candidate for the assessment of ethical theories.

2.3.2 Game theory, economic ethics and business ethics

Only shortly after von Neumann and Morgenstern's foundation of game theory as a science, this new approach was adapted as a tool for moral analysis by Braithwaite.[183] Along the same lines Schelling has used game theory for an analysis of ethical systems.[184] Thus the following section investigates the crucial relation between game theory and ethics. Finally, it conveys these conclusions to the field of economic ethics.

Often game theory is taken to be the common language for the unification of the behavioural sciences.[185] This idea was first envisioned in Schelling's *The Strategy of Conflict*.[186] More recently, Gintis explicitly claims that: "game theory is a universal language for the unification of the behavioural sciences."[187] Unfortunately game theory lacks attention in ethics and hence "it is hard to find a moral philosopher who thinks that game theory has any relevance to his subject at all".[188] As a consequence, the discussion of game theory and ethics is often dominated by economists.

Nevertheless, ethics is exposed to the application of game theory and the two theories are not as different as it might seem at first sight. Concepts similar to game theory can informally be retraced to the works of Hobbes and Hume.[189] Game theory in ethics is especially suitable for the analysis of social contract theory and for the principles and theories of justice in political philosophy. More precisely, it can help justifying the constitution of the social contract, which is usually devised as some thought experiment of a hypothetical bargaining situation. Thus using game theory, i.e. bargaining theory, ensures that the outcomes of the bargaining process, for example in the original position, are based on rational choices. In doing so it also formally exposes the conditions under which the agreement is stable. An alternative way to conceptualise the social contract is based on evolutionary game theory. Evolutionary game theory refrains from the view of one-shot games with singular interaction and shifts the focus to frequently repeated games. This alternative approach entails some technical advantages such as less rigorous assumptions regarding each player's rationality and full information.[190] Evolutionary game theory becomes especially useful when it comes to explaining the historic development of social norms. Accordingly, morality can be perceived as a natural product of rational choice. This notion is best formu-

lated by Harsanyi.[191] In Gauthier's extensive works bargaining theory in general and the prisoner's dilemma, in particular, are used to determine the distribution a social contract specified in equilibrium. In addition, he tries to prove that it is rationally necessary for all agents to comply with this distribution.[192]

As game theory focuses on consequences, in the form of pay-off structures, it is especially suitable for the analysis of utilitarian and contractarian theories.[193] It is less apt for deontology and virtue ethics. After all, deontological concepts such as Kant's categorical imperative cannot be maintained after a game-theoretic analysis. They require the players to behave irrationally, according to the standard economic rationality conception, in some situations, which are not conformable with the axioms of game theory.[194] The most important interrelation of game theory and ethics with the resulting controversies between the two sciences can be found in Gauthier's game-theoretically founded theory of the social contract.[195] He was the first to develop a whole moral theory on the basis of game theory and the idea of mutual advantages.[196] He justifies the application of game theory to ethics with resort to Hume who stated: "what theory of morals can ever serve any useful purpose, unless it can show, by a particular detail, that all the duties which it recommends, are also the true interest of each individual."[197] This relates to the traditional definition of instrumental rationality and leads to the conclusion that only situations which are rationally beneficial to every participant are stable. That is nothing else than the basic idea of equilibrium concepts in game theory. The connection between morality and game theory in the contractarian setting is based on the argument that both follow the doctrine of finding an outcome distribution in which it is not feasible to improve the situation of all parties involved.[198] Consequently, Gauthier constructs his "morality of advantage". More generally, the formalisation of contractarianism can also relate to the theory of cooperative games. With cooperative game theory contracts can be specified to overcome the strictly separate pay-off structure from non-cooperative games. However, one influential criticism of cooperative game theory as the basis for the social contract goes back to Hobbes, who stated that coming to an agreement is still different from fulfilling one's part of the agreement.[199] So non-cooperative game theory is the more realistic account, which is also the standard approach in economics. Thus game theory in ethics should also be a tool for analysis rather than for enforcement.

Solomon has criticised that game theory has first been a disaster in ethics and that it is now harming business ethics.[200] But this criticism has already been fiercely refuted by Binmore, who demonstrates how it is based on a mistaken understanding of game theory.[201] Similarly, Buchanan argues that nowadays game theory is applied to virtually all branches of the social sciences as well as to philosophy. But at the same time he doubts that any area except for economics has yet realised the potential of game theoretic methodology.[202] Therefore, it is worth discussing the extent to which game theory can be used as a framework for ethics.

First of all, it can be stated, that "the principles of game theory are ethically neutral, like modus ponens in logic or $2+2=4$ in mathematics."[203] This makes

game theory a universal tool for the analysis of ethics.[204] Fundamentally based on the axiom of strict rationality, game theory is about the consistent choice of rational actors and makes predictions about their behaviour. Its focus on interaction as in economic contexts renders it just as useful for studying coordination and cooperation in a moral context.[205] A mistake often made in the ethical assessment of game theory is to reproach it with being only concerned with money. But in fact game theory uses a value-free concept of pay-offs and pay-off functions.[206] These can instantiate different preferences and values for each agent and must not incorporate monetary pay-offs at all. The outcomes or pay-offs represent the player's valuations which are not necessarily restricted to money, but can also account for social preferences such as pure altruism, social welfare, etc.[207] Therefore this line of criticism misunderstands the whole concept of utility as it is commonly understood and applied in utilitarianism and economics. However, in economic decision situations the pay-off utility is often driven by monetary incentives. What also becomes apparent with the rich pay-off concept of game theory is that rationality is not necessarily synonymous with utility maximisation. Hence it can lead to equilibriums that are neither individually nor socially optimal outcomes.[208] The application of game theoretic solution concepts yields stable outcomes, but not necessarily Pareto-optimal outcomes. However, game theory assumes individual rationality and thus provides an excellent framework for studying deviations from rationality.

Taking all aspects and application of game theory into account it becomes evident, that it is an excellent tool for order ethics as well. Already Braithwaite has stated that bargaining games are strongly related to issues of distributive justice.[209] Moreover, every established business practice amounts to some equilibrium in a game theoretic model.[210] In general, morality ought to prevent failures of individual rationality, as exhibited in the prisoner's dilemma, for example.[211] The structure of the prisoner's dilemma is also central to order ethics because it exhibits the problem of failing to achieve social efficiency, whilst maintaining individual rationality. It combines the problems of moral hazard and missing incentives.[212] Therefore order ethics aims at creating or rearranging incentive structures according to the socially desired outcomes.[213] The general focus on the design of rules is a promising approach to business ethics and economic ethics.[214] It also makes order ethics very suitable for the application of game theory. But there are some aspects which have not yet been discussed in sufficient detail. First, order ethics needs to be related to the theory of infinitely repeated games. These games are more complex to analyse than simple one-shot static games, but they are also much more attune to real life and business encounters. Hence it is crucial to understand business interaction as a (infinitely) repeated game.[215] A second shortcoming of order ethics is the neglect of individual behaviour which is particularly important on the business ethics level. This should also lead to a discussion relaxing the strict assumptions of a Homo oeconomicus. In contrast to neoclassical economics, game theory is not necessarily restricted to the concept of Homo oeconomicus.[216] Thus game theory can also be applied to this aim. But studying behavioural aspects does not only need

game theory it also requires practical evidence on real human behaviour in economic contexts. This combination is most extensively studied by behavioural economics, which will therefore serve as the basis for the main analysis of this book. Nevertheless, game theory is an ideal framework to advance the analysis and structure of order ethics with regard to human behaviour.

2.4 Behavioural economics and ethics

After having introduced game theory as an analytical method, the field of behavioural economics is presented. Therefore the close relations of behavioural economics with the moral tradition of Adam Smith are described and the related fields of experimental economics and social psychology are characterised as far. This section establishes the crucial connection between ethical and economic theory, which is based on the conviction that: "economics as it has emerged, can be made more productive by paying greater and more explicit attention to the ethical considerations that shape human behaviour and judgement."[217] This realistic account of human agency is at the heart of behavioural economics and therefore it needs to be related to ethics. Also a relation between behavioural economics and economic ethics is established, serving as the foundation for the further investigations.

2.4.1 The foundations of behavioural economics

Neoclassical economics has its roots in the moral philosophy of Adam Smith.[218] It builds on the two central assumptions of rationality and self-interest. However, neoclassical economics has dispensed with its moral dimension and is neglecting normative concerns.[219] Therefore behavioural economics is partly motivated by these deficits. More generally, it aims at explaining certain market outcomes or more precisely observable deviations from rational choice.[220] In contrast to the two key assumptions of neoclassical theories, behavioural economics takes different conceptions of rationality as bounded rationality and social preferences instead of strict self-interest. The first unsystematic idea of behavioural economics can also be retraced to Smith, who already suggested that there was some disproportionate aversion to losses: "We suffer more, it has already been observed, when we fall from a better to a worse situation, then we ever enjoy when we rise from a worse to a better."[221] This intuition was formalised 200 years later in the economic concepts of prospect theory and the general human inclination to risk aversion.[222] Similarly, the insensitivity to opportunity cost as a behavioural economics theory was already described by Smith.[223] In a first phase behavioural economics has exposed and established some facts about unrealistic aspects in neoclassical economics; e.g. anchoring, problems of self-control, cognitive dissonance, social preferences, loss aversion and the endowment effect. In a second stage it has moved on, developing explanations and theories for these anomalies of the traditional paradigm. The field of behavioural economics also accommodates the subdivisions of behavioural finance[224] and behavioural game theory.[225]

The emergence of behavioural economics is based on the insight that observed behaviour systematically departs from standard economic predictions. These observations are enabled by experimental economics as the main research method.[226] This technique was inspired and adapted from research in psychology. Psychological insights are a fruitful base for economic theory, since psychology as a science has never been as dogmatic as neoclassical economics.[227] Therefore, psychology has always valued the real behaviour of human beings higher than the ideal.[228] Accordingly, behavioural economics has taken up theories from social psychology to adapt economic theories and make it more in line with actual human nature and behaviour.[229] In the face of psychology, adapting the experimental methodology was only a logical consequence. However, behavioural economics is more than psychology. Despite these novel influences, game theory as a central pillar has persisted. Within behavioural economics, it serves as the formal framework for the analysis of human interaction and builds a bridge between psychological insights and economic models.[230] Therefore theories and experiments in behavioural economics are conducted much more rigorously and are analysed much more formally than in psychology. Early experimental works in economics were conducted only shortly after the inception of game theory, starting in the 1950s and then gaining increasing momentum.[231] Now, experimental economics is a well-established field of behavioural economics.[232] More importantly, the systematic combination of game theory and experimental economics has generated significant advances, for example in the theory of public goods and bargaining theory.[233] Altogether, behavioural economics is the application of social psychology and experimental methodology to economics.[234] A schematic interrelation of the building blocks of behaviour economics can be taken from Figure 2.3.

From a philosophy of science point of view behavioural economics is based on behaviourism. This paradigm also derives from psychology and focuses on the investigation of how organisms behave.[235] Thus behaviourism abstracts from mental processes.[236] Moreover, the natural research methodology of behaviourism is to conduct experiments. The resulting theories in behavioural economics are usually based on a dualist view of the human cognitive apparatus. Typically, there is one intuitive system and one deliberative system.[237] Accord-

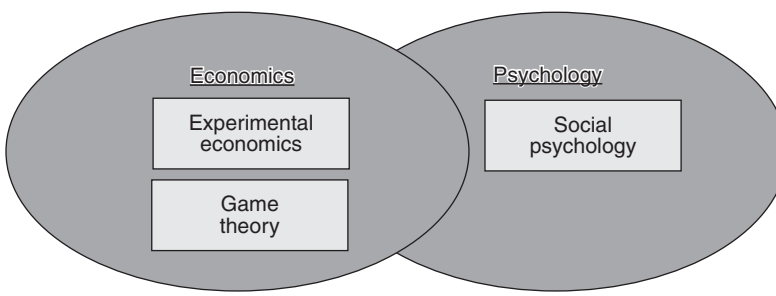

Figure 2.3 The field of behavioural economics.

ingly, there are two lines of research which combine behaviouristic and economic elements. First, human cognition moves from strictly rational utility maximisation to bounded rationality conceptions including heuristics and learning.[238] And second, economic behaviour is a result of interaction, thus social factors such as a sense of fairness or the volition of justice become relevant. Accordingly, human motivation moves from full individual preferences to procedural justice and social preferences such as inequity aversion and altruism. Psychology is involved in both streams. With regard to human cognition, the limits of cognitive abilities have a long-standing tradition in psychology and their instantiations are familiar to every undergraduate student in psychology. For example, the "Tichtener illusion" shows that when one circle is surrounded by small circles and another circle of the same size is surrounded by bigger circles, the circle with the smaller surrounding circles appears bigger to our human perception. Moreover, behavioural economics goes beyond the mere doctrine of self-interests and tries to account for factors such as bounded rationality, fairness, reciprocity, non-Bayesian judgements and evolutionary learning.[239] Regarding human motivation, elements of social comparison theory have been highly influential to behavioural economics. As economic agency does not take place within a vacuum, humans get their self esteem and the meaning of their actions not from absolute individual achievements, incomes etc. Instead the general meaning is derived by a comparison of oneself with one's environment.[240] For example, there are no objective standards for wealth, wealth is only perceived as a social measure relative to the income in a certain country and social group.

In the following, the central concepts of neoclassical economics are related to their modern behavioural economics counterparts (see Table 2.3). The first three neoclassical concepts, i.e. rational preferences, Bayesian judgement and equilibriums loosely encompass instances of the strict rationality assumption. Here behavioural economics highlights that preferences are only boundedly rational, as they are often only relative to some reference point or vary based on the situational framing. Bayesian judgement is also difficult to maintain from a

Table 2.3 Mapping neoclassical economic concepts into behavioural economics

Neoclassical economics concept	*Behavioural economics concept*
Rational preferences	→ Framing effects (Tversky and Kahneman (1986)) → Reference points (Kahneman and Tversky (1979))
Bayesian judgement	→ Conjunction fallacy (Tversky and Kahneman (1974)) → Overconfidence (Fischoff *et al.* (1977))
Equilibrium	→ Learning (Erev and Roth (1998))
Self-interest	→ Fairness (Rabin (1993)) → Inequality aversion (Bolton and Ockenfels (2000)) → Reciprocity (Falk and Fischbacher (2005))

behavioural perspective, because decision makers usually exhibit the conjunction fallacy and often also a general overconfidence bias. With regard to the equilibrium formation in game theory, behavioural economics does not directly rebut the neoclassical perspective, but re-emphasises the importance of learning. Against the standard assumptions of game theory people immediately derive the optimal decisions and thus behave rationally in equilibrium. But behavioural evidence shows that learning is inevitable in order to at least approach equilibrium behaviour. Finally, the neoclassical assumption of self-interest is refined in various concepts accounting for the social context of economic decision making. So fairness, inequality aversion, reciprocity or most likely a combination of these elements serves as a behaviourally adequate explanation for human motives.

The main success of behavioural economics has been to have taken up some anomalies of human decision making and to develop sound theories for explaining them.[241] This has greatly improved the predictive power of economic theories and changed the way of thinking about human behaviour in economic contexts. With the evidence from behavioural economics, Homo oeconomicus as a simplified metaphor for human economic agency has become obsolete.

Altogether, behavioural economics is critically challenging the standard neoclassical assumptions concerning human behaviour.[242] It dispenses with the assumptions of narrow self-interest, maximising utility, stable preferences, Bayesian information processing and exponential discounting.[243] This focuses on the concepts of rationality and self-interest. Rationality is defined too rigorously in neoclassical economics and is consistently falsified in experimental settings. Therefore behavioural economics is based on the conception of bounded rationality, which can offer a more accurate representation of actual human capabilities and behaviour.[244] And furthermore, the concept of self-interest is restricted. Whilst there are some situations in which self-interest evidently is the sole or main driving force in economic decision making, there are a lot of experiments confirming that human beings also care for their fellows. Thus they base their decisions on social preferences. The according economic models of social preferences can explain much more observed behaviour than standard economic theory.[245] In essence, compared to the neoclassical alternatives, behavioural economics makes more complex and realistic assumptions modelling economic agents and thus human nature.[246] These insights from behavioural economics as a subject of traditional game theory and experimental economics have inspired the formation of a new field named behavioural game theory. Some authors argue that all economic actions are intrinsically behavioural and consequently a revision of game theory to behavioural game theory is necessary.[247] Therefore the new theory accounts for framing effects, cognitive hierarchies, learning and social preferences.[248] One very practical criticism, raised by behavioural economics evidence, against equilibrium concepts in standard game theory is that they assume the opportunity of learning economic behaviour at virtually no cost. But, in fact, there are a lot of real-life decisions which are by their very nature one-time decisions, e.g. buying a house, picking a university degree or retirement saving plans. Nevertheless, most experimental games show that economic

actors are not able to calculate the theoretic equilibrium in the first instance of a game, but rather the overall behaviour eventually converges to the Nash equilibrium. In behavioural game theory the importance of strong beliefs and "stubbornness" can be accounted for by incorporating them into the pay-off structure of a normal form game.[249] In these games, beliefs about other players' characters can form the crucial element in strategy formation.[250] Therefore one advantage of behavioural game theory is that it can overcome the problem of ambiguity of Nash equilibriums in many games. Under the assumption of perfect rationality, there are often multiple feasible equilibriums and behavioural game theory can help to find unique solutions or at least filter the number of rationalisable equilibriums under behavioural assumptions.[251] Moreover, research in behavioural economics has realised that economic interactions should be modelled as infinite games.[252] In behavioural game theory this is formally implemented by using finite automata, exhibiting limited memory and calculation capabilities.[253]

Research in behavioural economics is increasingly supplemented by neuroscientific methods which start to build the foundation for the newly emerging paradigm of neuroeconomics. By the same token, as social psychology is the foundation of behavioural economics, neuroscience is the foundation of neuroeconomics.[254] However, the field of neuroeconomics is beyond the scope of this book.

2.4.2 The methodology of experimental economics

Experimental economics has been at the heart of recent progress in behavioural economics. Classical and neoclassical economics have mainly been concerned with theoretical models and have tried to ignore the use of laboratory data for a long time. Originally, economics was conceived as a non-experimental science. This can not only be read from the works of Adam Smith, but was also explicitly stated by John Stuart Mill who pointed out the difficulty of controlling the environment during economic experiments.[255] Thus economics was understood as an "a priori deductive" science which idealised and defined the Homo oeconomicus. However, first experiments in social psychology with economic issues in mind have already been conducted in the 1930s, e.g. Thurstone's attempts to determine individual indifference curves.[256] But the systematic and widely acknowledged use of laboratory experiments in economics, with a comprehensive discussion of its robustness and underlying assumptions, only started in the 1960s with the pioneering works of Vernon Smith.[257] This shift in economic methodology was clearly supported by technical progress. The usage of computerised experiments made it possible to observe economically relevant interaction and at the same time to control for social interaction. So it was possible to overcome Mill's original scepticism towards experimental economics. Finally, in the 1970s and 1980s experimental economics continued with one of the most cited and inspiring contributions to economics by Kahneman and Tversky.[258] Subsequently, a lot of influential works followed in a short time.[259]

The idea of using experimental methods for economic settings is straightforward.[260] However, there is still a lively debate between economists and

psychologists about the difference in experimental methodology.[261] Nevertheless, a few theoretical foundations peculiar to economics experiments are worth mentioning in order to understand the experimental data supplemented in the following chapters. As with all experimental sciences, the essence of experimental economics is control.[262] So the experiments obey the *ceteris paribus* condition as does most of economics theory. In addition, potential social biases such as order and gender effects must be controlled for.[263] Also strict anonymity among the participating subjects is necessary.[264] Moreover, the design in terms of the subjects matching is crucial.[265] In a partners-matching the same players are matched for all economic decisions in one experimental setting, which is useful to study adaptation in behaviour and learning. On the contrary, in the strangers-matching the partners are changing continuously, for example to simulate the one-shot character and anonymity of many economic encounters.[266] Another design feature of economic experiments is that the same decision situation or game is played repeatedly.[267] This is meant to capture the real-life fact that people have the opportunity to make progress and learn from their mistakes.[268] Furthermore, different subject pools make it necessary to replicate results with different pools in order to generate robust findings.[269]

Finally, the key features of economic laboratory experiments are real monetary incentives and incentive compatibility.[270] This makes them distinct from psychological experiments, where participation and decision are often based on goodwill.[271] According to the principle of incentive compatibility, experiments are designed so that it is in the participants' interest to reveal all their private information.[272] This critically relies on the induced value theory.[273] Another key feature, which is often discussed, is the neutral framing in economic experiments.[274] Here the context of the decision is completely removed in order to avoid some anchors or triggers, which bias the decision-making behaviour.[275] As behavioural economics is still a new field, it is quickly changing. After years of laboratory experiments, field experiments are becoming increasingly popular. Here the field data is generated by naturally occurring experiment like settings.[276] With regard to experimental economics, it could be stated that a lot of observed outcomes are departures from rational behaviour according to orthodox economic theory, but they do nevertheless usually converge or show some Pareto-efficient end.[277] So the observed behaviour might be an evolutionary sensible product, which just does not yet comply with the corresponding theories. Nowadays, experimental economics is widely accepted and even used as a tool for policymaking in both businesses and politics. Some examples for its application are the auctioning of UMTS licences, the allocation of airport slots, railway transport capacities, the matching market for medical graduate students or the eBay reputation system.[278]

Finally, external validity is probably the most important criticism of experimental economics.[279] This discussion has also recently come to attention in the philosophy of science.[280] In fact, from a philosophy of science perspective, economics has always been a deductive-model-based science. But now this is transforming, as an increasing focus on inductive experimental techniques discovering significant regularities is replacing the solely theoretic approach.[281] Moreover,

the Duhem-Quine Thesis states that, as for all empirical tests, experiments are only a test of some interpretation of a theory under further auxiliary assumptions.[282] Hence the criticism of external validity is legitimate but insoluble. Nevertheless, the combination of experimental methodology with game theoretic theories especially is still guiding and dominating a lot of experimental research nowadays.[283] After all, these experiments are the only way to systematically investigate not only people's behaviour but also their motivation.[284] There is one crucial guideline for the application of experimental method: "there are more experiments that can be done than are worth doing and it is important as it is tricky to determine which are which."[285] Even more importantly for the scope of this book one can follow Levitt and List, two researchers active in both laboratory and field experiments. They arrive at the conclusion that laboratory experiments are a good guide for qualitative insights; whereas online field experiments deliver exact structural parameters.[286] Thus laboratory experiments suffice as a context for this book, since economic ethics and business ethics are mainly interested in qualitative relations.

2.4.3 Behavioural economics, economic ethics and business ethics

One prevailing shortcoming of ethics, business ethics and economic ethics is to undervalue their relation to economic theory. Here most authors are overly pessimistic in their diagnosis of business and ethics being antagonising forces. They are following Friedman's statement, that the sole responsibility of business is business.[287] On such a view, economics is only concerned with maximising profits and individuals are only driven by self-interest. However, neoclassical economics has its roots in the moral philosophy of Adam Smith.[288] Thus it suggests itself to think about the development of the relation between economics and ethics since its inception.

A first ethical perspective on behavioural economics was offered by Sen in 1977.[289] The resulting discussion of ethics and behavioural economics relates some central concepts of both disciplines. First of all, the social component of both disciplines as manifested in cooperation and competition is considered in Chapter 3, with a focus on a traditional game theoretic analysis. Second, the concept of rationality, or bounded rationality as commonly assumed in behavioural economics, is central to both fields. Thus the different approaches to and requirements of rationality need to be compared and assessed in Chapter 4. Moreover, the relation between economics and ethics in terms of fairness and justice can be determined, accounting for game theoretic rationalisation and empirical evidence of human behaviour and perceptions. This link is mainly investigated in Chapter 5. Also reconsidering virtue ethics finds strong relations with the framework of behavioural economics which is pursued in Chapter 6. Finally, the main objectives of economics, i.e. efficiency and profit, have to be put into an ethical perspective in the course of Chapter 7.

As already Aristotle has pointed out man acts as a *zoon politikon*.[290] Similarly behavioural economics shows that people do care about the consequences their

actions have on others. In general, economics has always been a science focusing on social entities.[291] In this matter, one finds that the field of behavioural economics shows a recent convergence of ethics and economics. It illustrates that human interaction is the central theme for both sciences and that also virtue ethics has strong ties with the new paradigm of behavioural economics. Moreover, this paradigm can make important contributions to the future discussion of business ethics, offering empirical evidence on the nature and limits of human decision-making capabilities. Generally, behaviour can only be understood in an institutional framework, which has evolved by evolutionary necessity, technological necessity, design and coincidence.[292] Therefore it is not farfetched to assume that morality and economic institutions have evolved simultaneously.[293] Behavioural economics provides major evidence for the importance of institutions.[294] Similarly, order ethics is based on an institutional foundation and advocates institutions as the foundation to overcoming problems in economic interaction.[295] As order ethics also emphasises the importance of rules and institutions it is only logical to employ behavioural economics as a framework for the examination and advancement of order ethics. Furthermore, behavioural economics and order ethics have many natural relations. First of all, order ethics insists on compliance with economic laws.[296] Thus as the laws and models of economics change, because of the paradigm shift towards behavioural economics an assessment of the relation between behavioural economics and order ethics becomes necessary. In particular, order ethics claims that self-interest is sufficient for rule-following in an institutional setting.[297] Therefore the shift from strict self-interest to social preferences in models of behavioural economics requires a detailed discussion of how these models can be reconciled with order ethics. Moreover, order ethics explicitly accounts for the incorporation with other disciplines such as sociology, economics and other sciences.[298] Therefore it already advocates an interdisciplinary approach very attuned to behavioural economics. Hence a reassessment of empirical evidence from the related disciplines is also useful. In addition, there is scope for refinement of order ethics with regard to game theory. Most accounts of order ethics focus their game theoretic argument on static games, but the real "game of life" is not one-shot but rather a repeated game.[299] Hence game theory and behavioural game theory can be used to sharpen the respective arguments in order ethics. Also experimental methodology or, more precisely, experimental evidence can be used to discuss the central upshots of order ethics in terms of their anthropological soundness. This general benefit of applying experimental economics to order ethics has already been discussed and proven.[300] And finally, both theories are concerned with the design of institutions, order ethics with moral institutions behavioural economics with economic mechanisms.[301] This aspect is treated in some more detail in Chapter 7.

For this book the combination of empirical evidence and normative theory is crucial. The relationship between theory and data in the sciences has always been subject of serious discussions.[302] Therefore in the following, some arguments in favour of this research approach are discussed. It has already been

argued that business ethics and economic ethics are especially suitable to the data-guided combination of normative philosophy and empirical economics.[303] Furthermore, in economics, for example, Rubinstein has stressed the importance of clearly distinguishing positive and normative questions.[304] On that basis, even though experimental observations might not bring definitive answers to ethical questions, they can be very useful for the formation of ethical theory. Traditionally, the role of economics is focused on the explanation and prediction of economic behaviour,[305] i.e. "the role of the social scientist is limited to explanation and prediction, and it does not extend to the formulation of norms."[306] However, any relevant theory of business ethics must accommodate the empirical facts documented in behavioural economics. And vice versa, every ethical theory must fulfil the requirements of normative foundation and universality. Altogether, the ideal ethical conduct of business cannot be discussed without any reference to the real behaviour.[307] Hence business ethics as well as virtue ethics need to be discussed in the light of the findings in behavioural economics. This approach was first explored by a shared conference on "Behavioral Research and Business Ethics" in 1994.[308]

From a meta-ethical perspective, Hume has already discussed the problem of distinguishing normative and empirical matters, for there is a crucial difference between descriptive and prescriptive propositions.[309] His main point is to be cautious when basing normative inferences on empirical evidence.[310] The combination of ethics and economics posits a gap between normative and empirical research. Initially, normative and empirical concepts have always been treated independently. But as economics, ethics and order ethics all rely on a certain model of human nature and social processes, there is much potential for combining the respective empirical and normative research.[311] For example, rules rely on the fact that their normative content is based on broad social consensus.[312] But this consensus is a matter of empirically observed reality. On top of that, behavioural economics offers the currently most advanced models on which to base ethical theories. In particular, business ethics as applied ethics needs to surpass the normative level and complement it with empirical insights.[313] After all, the main end of normative business ethics must be to take some perception of the ideal and use it as a reference to criticise the real.[314] However, no ethical theory can ignore human nature or instincts.[315] These instincts become manifest in experimental data. Hence normative principles also have to accommodate the empirical facts. In general, economic theory is a guide to norm evolvement and a means for norm enforcement.[316] Analogously, ethical theory needs to remain adaptive to account for changes in the social reality.[317] Therefore it is very advantageous to base normative arguments on empirical evidence and accordingly this approach is pursued during this book.[318] Even though experimental observations might not bring definitive answers to ethical questions, they can be very useful in a cumulative process of guiding the formation of ethical theory.[319] After all, morality depends on all humans having similar capacities.[320] This is a core assumption implicitly shared with classical game theory,[321] although much experimental evidence and the discussions in Chapters 4 and 5 shed doubt on its

empirical adequacy. With regard to decision making as the core subject of economics, it can be argued there are two factors shaping our decisions. First, there are the empirical expectations of others and second the normative expectations of our environment.[322] Thus normative theories in general must not ignore empirical evidence which guides us to the things as they are.[323] Consequently, modern theories of ethics, such as economic ethics and business ethics require an empirical underpinning, which can be provided by the related field of behavioural economics.

In the following, the basic idea of bringing ethics and economics closer is maintained, but extended by a discussion of behavioural issues. Behavioural economics is already an established and still-growing part of the economics community. Moreover, it has exposed and reproduced systematic departures from strictly rational decision making. These departures are too severe and significant to be ignored, especially as behavioural economics does not only describe them but also offers new theories for explaining them. Hence order ethics also needs to be discussed in the light of these findings. Identifying the consequences of behavioural economics for order ethics can yield a substantial improvement of its theoretic framework. And it can help to adjust order ethics to the new challenges of economic theory, which arise with behavioural economics.

3 Cooperation in economic ethics

Ethics is in origin the art of recommending to others the sacrifices required for cooperation with oneself.

(Bertrand Russell)

The following chapter deals with cooperation as the central element of economic agency. It argues that the origins of cooperation can best be analysed by means of non-cooperative game theory. This approach also integrates the ethical approach of social contract theory. Accordingly, this chapter maintains a strong rationality assumption, as required for a purely game-theoretic analysis. Moreover, it starts with an analysis of strict self-interest. On this basis some game-theoretic structures are analysed and the according experimental evidence is discussed. The relevant games for this discussion mainly exhibit social dilemmas, i.e. inefficient equilibriums. Finally, the main findings are related to order ethics, as a theory based on the social contract tradition.

3.1 Cooperation in game theory and ethics

In the following, cooperation is discussed in the light of modern theories of the social contract and from the perspective of game theory. The discussion is based on the assumptions of normative rationality and individual self-interest. On this foundation game theory can be used to derive various justifications for cooperative behaviour.

3.1.1 Cooperation and modern theories of social contract

As Aristotle had realised with his ethics of exchange, cooperation is a very natural human trait.[1] This insight is substantially reflected in his definition of human beings as a *zoon politikon*.[2] His definition has sustained for a long time and it is still commonly agreed upon that "a distinctive feature of humans compared to other species is the high rate of cooperation with non-kin."[3] The question of why people cooperate found it first modern philosophical conception in Hobbes's *bellum omnia contra omnes*.[4] The corresponding milestone in economics would be Smith's quote:

> It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest. We address ourselves, not to their humanity but to their self-love, and never talk to them of our own necessities but of their advantages.[5]

So Hobbes conceived cooperation as a matter of social contract, whereas Smith saw its foundation in the mutual self-interest of human agents, which can be seen as a pre-stage of the social contract. Similarly, Rawls conceives society as a venture for the mutual benefit of all.[6] More generally, social contract theories rely only on individual self-interest and in its classical reading, cooperation is always beneficial to some degree for all members of a society. Thus mutual benefits are the key motivation for cooperation and one main driver for order ethics. Concerning cooperation, standard rationality is still a very popular assumption in ethical accounts of social contract theory.[7]

Based on the above characterisation of the social contract, relying on rational behaviour and mutual self-interest, it is only consequential to apply game theory for the advanced analysis. The first author realising this potential was David Gauthier. He claims that the ideas of mutual advantages and the resulting cooperation are inevitable for a functioning society based on economic exchanges.[8] The foundation for his theory is adapted from Rawls's "original position" and characterised as the "initial bargaining position".[9] Gauthier justifies game theory as the best base for ethical theories, because morality is not concerned with the outcomes one inflicts on oneself, but with the outcomes one inflicts on others. Hence every morally relevant situation is interactive, which makes game theory the most suitable tool for its analysis. According to Gauthier, in every population of self-interested individuals, conflicts are unavoidable. Therefore he argues that morality is the solution to overcome social dilemmas such as the prisoner's dilemma. One remarkable feature is that he prioritises moral theory over moral intuitions.[10] Consequently, in case the theoretic prescription contradicts some moral intuitions, he would adhere to the theoretical recommendation.[11] This is only consequent from a game-theoretic perspective, but implies an understanding of normativity as independent of reality. Moreover, with regard to business ethics, the market is described as free from morals.[12] This main theme of Gauthier's theory, i.e. focusing on self-interest and individual benefits is subject to some criticism, as it is consistent with the critical self-interest assumption of neoclassical economics. Hence it is contentious for an ethical theory, whether the often only material advantages can be valued higher than the reasons and intentions of actions. Considering Gauthier's account from a game theoretic perspective also raises some serious criticism. So he uses game theory to develop his theory, but he does not stick to the axioms of game theory. His idea of focusing on the mode of deliberation ignores the traditional assumption of just focusing on the outcomes of decision-making processes. Furthermore, some modern accounts of social contract theory based on game theory can be denoted as "bargaining contractarianism".[13] Here bargaining theory as a branch of game theory relates to the enactment of the social contract. It also

represents the problem for human agents to coordinate on cooperation to obtain mutual benefits.[14] However, Rawls, for example, rejects any account of bargaining contractarianism, as the principles of justice cannot be the outcome of a bargain which relies on individual talent.[15] Consequently, such an agreement cannot be binding and stable. In the following, I focus on the game-theoretic perspective on cooperation and the resulting lines of argument.

3.1.2 A game-theoretic rationale for cooperation

The general benefits and operation of cooperation have already been realised by social contract theories. Now a more detailed discussion based on game theory is initiated. The first game theoretic treatment of cooperation and the origins of bargaining theory can be found in the works of Aumann and Schelling.[16] The most advanced and comprehensive game-theoretic treatment of ethics is founded in the works of Kenneth Binmore.[17]

First of all, it is necessary to relate the issue of cooperation to the framework of game theory as presented in Section 2.3. It is crucial to bear in mind that "game theory is actually about both conflict and cooperation, because realistic games contain the potential for both."[18] In this regard it is crucial to separate between the motive of greed and the consequence of competition.[19] For the time being I focus on the motivational structures and individual preferences for cooperation, whereas Chapter 5 takes up the distributive and procedural issues raised by competition. Accordingly, only the field of non-cooperative game theory is relevant to the analysis of cooperation based on mere self-interest. In non-cooperative games one cannot collude secretly. Here all cooperative action must be explicitly modelled in the normal form game.[20] Moreover, both classes of static and dynamic games are applicable. However, it is very difficult to identify the games best representing the conflicts of social cooperation. Some authors argue that one particular game is the perfect metaphor for the formation of social cooperation. In this vein, it is often argued that the prisoner's dilemma exhibits the basic problem of human cooperation.[21] This view is typical for ethical theorists, as the game-theoretic solution to the prisoner's dilemma is suboptimal and thus unsatisfactory from a normative perspective. However, the following discussion contains more than the basic prisoner's dilemma. Focusing on order ethics I take up the most important classes of cooperation games from the economic literature. These are the standard prisoner's dilemma, the altruist's dilemma, the stag hunt game, the iterated prisoner's dilemma, and public good games. But before analysing each game in detail I need to outline the important general normative arguments derived from game theory.

Scope of strict self-interest and strategic self-interest

The first line of argument presented here is the evolutionary one. It is based on the works of Binmore. He offers the currently most sophisticated account analysing the normative implications of game theory for ethics.[22] His account relies on the

notion of human self-interest, implying that the social contract must not be binding a priori.[23] This makes it in line with economic theory, i.e. neoclassical models. In order to strengthen the assumption of self-interested play in games Binmore uses an evolutionary argument. Accordingly, players have to play the rational best answer strategies prescribed by the Nash equilibrium, because otherwise evolution will replace them with more ruthless and rational players in the long run.[24] Moreover, Binmore's account of the social contract follows a naturalistic framework, thus fully dispensing with metaphysical elements. Overall, the evolutionary argument postulates a very strict conception of self-interested individuals.[25]

The second general line of argument derived from game theory is that only cooperation realises the achievement of Pareto-efficient outcomes in social dilemma situations such as the standard prisoner's dilemma. However, the underlying mechanisms are not trivial. For instance, Kantian deontology would simply demand cooperation in the prisoner's dilemma, but from a game-theoretic point of view Kant owes us a justification of how to unite this demand with individual self-interest.[26] One solution is to alter the equilibrium concepts of game theory, as for example with Rabin's concept of fairness equilibrium.[27] But this entails a lot of other problems. On the contrary, if one has an established and formally sound theory such as the game-theoretic framework it is better to refine the assumptions instead of deforming the whole theory. Therefore, the second solution needs to relax the assumptions of strict self-interest and individual maximisation. Here it needs to be pointed out that this does not necessarily conflict with order ethics. After all, order ethics wants to establish rules on the grounds of self-interested behaviour, but this understanding also accounts for mutual advantages and thus strategic self-interest.[28] In particular, behavioural economics has frequently shown that strict self-interest is not a successful strategy in most games.[29] By contrast, strategic cooperation, for example by means of reciprocity, is often the best strategy to employ. This is based on a strategic conception of self-interest and stresses the possibility of win-win situations in social dilemma games.[30] Strategic self-interest has just become possible with the advancement of game theory in behavioural economics, as it can formally account for economic motives other than naive individual self-interest.[31] So the social contract component is bolstered up and the solutions are based upon mutual consent.[32] Consent also implicitly yields a weaker conception of self-interest than put forward by the evolutionary argumentation solely relying on species optimisation. The mutuality of consent is a criterion also shared with order ethics.

Equilibrium selection: efficiency, risk dominance and focal points

The next aspect concerns central aspects of game theory and focuses on aspects of dominance and equilibrium selection. This starts with a closer look at efficiency. So it can be argued that:

> there is a mismatch between ethics and efficiency, either because ethical standards which might have had efficiency justifications long ago no longer

> do, or because the behaviour that is ethical in some idealised society makes matters worse in the real world. For example, the ethical norm against debt or interest, which might have been justifiable a millennium ago, is clearly no longer efficient.[33]

This view puts emphasis on the importance of taking empirical factors for order ethics into account. After all, the market as a normative institution is susceptible to continuous change, based on political changes, technological advances and economic findings. In more detail the Pareto-efficiency definition as already presented in Chapter 2 is particularly relevant to both game theory and order ethics as it ensures the maximisation of social welfare.[34] It is a useful guide for the process of allocating resources.[35] However, one line of criticism against Pareto-efficiency is that it does not take the absolute distribution into account.[36] So from an ethical point of view economic efficiency must not be overweighted. With regard to ethics, the concept of Pareto-efficiency builds up on utilitarianism and libertarianism. But employing a wider perspective other equally sound decision criteria are conceivable. The two probably most established alternatives in game theory are focal points and risk efficiency. So many coordination games include cultural norms which can serve as a substitute to Pareto-efficiency in equilibrium selection.[37] These norms consist of aspects of static efficiency, i.e. comparative statics, as well as dynamic efficiency, i.e. long-term incentives. More importantly, Pareto-efficiency and risk-efficiency can conflict. For example, consider the symmetric coordination game, depicted in Table 3.1.

This basic game has two Nash equilibriums, one in the strategies (A, A) and the other in (B, B). But whilst the equilibrium in (B, B) is Pareto-efficient only the alternative equilibrium in (A, A) is risk-efficient. In fact the experimental test of this game shows that 98.5 per cent of players opt for (A, A) and only 1.5 per cent for (B, B).[38] As already highlighted, human decision makers are loss averse and thus they are willing to sacrifice some pay-off to have the security of getting eight for sure, instead of obtaining either ten or zero. The same conclusion can be established with reference to the concept of trembling hand perfection. Here the equilibrium is still based on fully rational and self-interested players, but allows for taking opponents' mistakes or irrationality into account. Hence the idea of individual self-interest and strict maximisation needs to be questioned on the grounds of risk dominance and trembling hand perfection. Moreover, it shows that Pareto-efficiency is not the only potential selection criterion in game theory and that other criteria can even override the Pareto-efficient

Table 3.1 Coordination game with multiple equilibriums

		Player 2	
		A	*B*
Player 1	A	8; 8*	8; 0
	B	0; 8	10; 10*

recommendations. Strict rationality as an axiom of game theory can justify both selections. But for the more popular equilibrium (A, A) one has to relax the notion of self-interest and incorporate risk considerations into it.[39] With regard to order ethics the concept of risk dominance in equilibrium states necessitates a critical discussion in Section 3.3, because order ethics does not yet integrate risk into its analysis. This issue also generally highlights how complex the relation between ethics and efficiency really is.[40]

The arguments in this section have been focused on economics and game theory. This includes the assumptions of rationality and two important conceptions of self-interest. So far I have established that the degree of self-interest is a crucial point for cooperative behaviour in order ethics considering the core assumptions of game theory. Here strategic self-interest must be contrasted with the standard notion of strict self-interest.

3.2 Coordination games and motivational grounds for cooperation

So far the focus has been on general ethics, especially in the tradition of social contract theories. As will be shown, it is a common misunderstanding that one dilemma structure, usually the prisoner's dilemma, can capture all real social situations. Therefore this section discusses the requirements of games suitable for the analysis of economics. This focuses on cooperation in coordination games and relating to order ethics. The formal analysis of these games, combined with some normative reflections, helps to elucidate the motivations and scope of cooperation.

3.2.1 Static coordination games

First, I discuss static coordination games, i.e. the stag hunt games, the classical prisoner's dilemma and an important variation which is the altruist's dilemma. This helps to structure the discussion for the scope of self-interest in social interactions.

The game theoretic structure of the prisoner's dilemma was first presented by Merrill Flood and Melvin Dresher at the RAND Corporation.[41] The traditional story of two prisoners for this decision situation was then introduced by Luce and Raiffa.[42] The elementary structure of the prisoner's dilemma exhibits beneficial defection versus costly cooperation.[43] This is illustrated in the normal form game of Table 3.2.

The crux of this game is that when considering mutual defection as the stable Nash equilibrium, there is another Pareto-efficient solution to the game in mutual cooperation. But this is no Nash equilibrium, i.e. no option for a fully rational agent. So "game theorists have long been intrigued by the paradox that individual rationality may lead to social inefficiency."[44] The dilemma is so popular because it simply captures the essential problem of coordination in some situations. Its practical application can be found in arms races or the introduction of

Table 3.2 Static prisoner's dilemma

		Player 2	
		Cooperate	*Defect*
Player 1	Cooperate	2; 2	0; 3
	Defect	3; 0	1; 1*

advertising to a certain industry. Here no advertising would be the Pareto-efficient cooperation, whereas advertising is the equilibrium, which emerges once the first company starts to use advertising. More generally, all accounts of order ethics argue that the prisoner's dilemma is a good representation of economic competition.[45]

However, Binmore argues from an evolutionary point of view that it is a serious mistake to interpret the prisoner's dilemma as the basic problem of human cooperation. If the prisoner's dilemma were an accurate picture of real life, then cooperation and humanity would probably not have evolved in their current social form.[46] One additional shortcoming is that the prisoner's dilemma does not account for kinship or friendship. So it is intuitive that the game play between strangers and kin will yield very different results.[47] From a moral point of view a naive solution to the prisoner's dilemma is defining morality as overruling individual self-interest to achieve the more efficient solution.[48] But this withdrawal of individual self-interest is critical from an order ethics perspective. With regard to experimental economics, the misperception argument claims that people in experiments mistakenly understand the one-shot prisoner's dilemma as a repeated game.[49] This could explain why some people still cooperate in the one-shot game. However, the repeated prisoner's dilemma tells a different story and is perhaps the more accurate metaphor for economic interactions. This is taken up in Section 3.2.2.

Another important motivation for economic actions can be altruism.[50] In analogy to the prisoner's dilemma, which illustrates the problems of selfishness, one can construct an altruist's dilemma, as depicted in Table 3.3.[51]

In this dilemma promoting the opponent's pay-off is the employed strategy in order to avoid the Pareto-inefficiencies of the prisoner's dilemma. But, when both players follow this strategy, they yet again arrive at the inefficient solution. In this game structure, which is arguably more theoretic than the prisoner's dilemma but can still be found in some economic encounters, the selfish non-strategic approach

Table. 3.3 Static altruist's dilemma

		Player 2	
		A	*B*
Player 1	A	0; 0	1; −2
	B	−2; 1	−1; −1*

would yield a higher pay-off for both players. Therefore, playing a strategy with regard to the partner's pay-off leads to an inefficient outcome. So motivating people to act purely altruistically can also result in socially inefficient states and should not be a general policy in any ethical theory. Considering both dilemma situations, too much and too little self-interest both result in inefficient outcomes.

Another challenge to the game-theoretic analysis of economics in order ethics are games with multiple equilibriums, which leads us to the problem of equilibrium selection. The most basic ethical game exhibiting such a structure is the stag hunt game which can already be found in Rousseau's justification of the social contract.[52] In this coordination game, two hunters have to coordinate on their prey. In any case, where they manage to hunt the same animal, the chances for success are significantly higher and so are the pay-offs. Within the set of promising hunts the stag having more meat is to be preferred over the hare. This is illustrated in the normal form game of Table 3.4.

First of all, this game shows a structure where mutual cooperation can be individually rational. However, the game has two equilibriums in pure strategies, i.e. (stag; stag) and (hare; hare). The equilibrium in (stag; stag) is Pareto-efficient and (hare; hare) is risk efficient. The stag hunt game is also mentioned in the literature on order ethics.[53] However, order ethics generally does not consider the problem of equilibrium selection, resulting from this game for example. Hence this game illustrates the necessity for order ethics to find mechanisms for equilibrium selection. Hence a moral assessment of equilibrium selection finding an appropriate hierarchy is necessary. Moreover, as the various games have illustrated, a wide range of game structures is necessary to represent all possible forms of economic agency.

3.2.2 Dynamic coordination games

After having discussed various static coordination games and their relation to order ethics, I now move on to dynamic coordination games. These are not yet related to order ethics. But they are very relevant as in many repeated games deviations from self-interest can be the optimal strategy. So "being nice" can animate other players to be nice as well. Thus global Pareto-efficient outcomes can only be realised dispensing with strict self-interest. The general scope of self-interest was already questioned in terms of adequacy with static games. But it is even more unrealistic to maintain it, when considering dynamic games. With reference to the experimental evidence the equilibrium predictions of game

Table. 3.4 Stag hunt game

		Player 2	
		Stag	*Hare*
Player 1	Stag	4; 4*	1; 3
	Hare	3; 1	3; 3*

theory are seldom met in these games.[54] In the following, the repeated prisoner's dilemma and the iterated public good game are discussed as some basic examples for dynamic games.

Repeated prisoner's dilemma

For the analysis of real economic situations it is important to extend the prisoner's dilemma to repeated interactions which can be captured by finitely and infinitely repeated games.[55] The game itself is presented in Figure 3.1.

Here one can see a two times repeated prisoner's dilemma in extensive form representation. This game is a symmetric repetition of the static prisoner's dilemma game, where the pay-offs add up. The infinitely repeated game only continues this basic structure. Regarding the information structure, on each stage both players simultaneously have the opportunity to opt for defection or cooperation. For the pay-offs there are four elementary outcomes, as in the standard game, which are denoted as P, R, S and T. P represents mutual defection on any stage, R represents mutual cooperation. S stands for cooperation of the first player and defection of the second player, whereas T marks defection of the first player and cooperation of the second player. These outcomes are combined according to the different combinations of decision and build the complete pay-off space. In the finitely repeated prisoner's dilemma the unique subgame perfect equilibrium is constant defection, as long as there is no opportunity for punishment. However, for the infinitely repeated prisoner's dilemma cooperative equilibriums are well established.[56] As this is the more intuitive solution, especially when the partners do not change, the finitely repeated game has been studied intensively. So simulation-based research on the repeated two-person prisoner's dilemma suggests the following strategic elements to increase the level of Pareto-efficiency: no envy, no initial defection and strong reciprocity.[57]

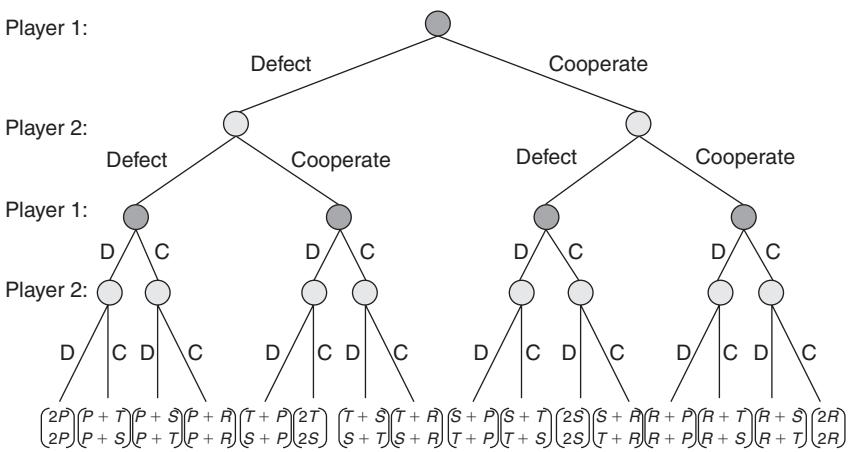
Player 1:
Defect
Cooperate
Player 2:
Defect
Cooperate
Defect
Cooperate
Player 1:
D C D C D C D C
Player 2:
D C D C D C D C D C D C D C D C
2P P + T P + S P + S P + T P + R T + P 2T T + S S + T T + R S + R S + P T + P S + T T + S 2S S + R T + R R + P R + P R + T R + S R + S T + R 2R
2P P + S P + T P + R S + P 2S S + T S + R T + P T + S 2S T + R R + P R + S R + T 2R

Figure 3.1 General repeated prisoner's dilemma in extensive form.

With regard to experimental games, cooperation in such a game is much higher in a partners-matching than in a strangers-matching. With a partners-matching the possibility to build reputation arises, which can be argued also to be a characteristic feature of many business situations. On the other hand, in a strangers-matching anonymity and free-riding incentives are introduced to the game structure.[58] In both matchings many people seem to unintentionally play the finitely repeated game as an infinitely repeated game. Moreover, in the finitely repeated prisoner's dilemma it can be shown that even small probabilities that the partner is getting an additional non-monetary benefit from cooperation,[59] can result in sequential equilibriums which establish mutual cooperation.[60] Hence it is not even necessary to dispense with self-interest in this regard, but the perspective of strategic self-interest needs to be taken, which can employ a wider notion of pay-off functions.

Public good games

The iterated public good game is a special case of the prisoner's dilemma.[61] Hence the extensive form of the iterated public good game is analogous to the repeated prisoner's dilemma. However, it is also worthwhile to discuss this repeated game, since it can represent slightly different economic situations. In this game the players can coordinate on their efforts towards a public good. A genuine public good is completely non-excludable and non-rival. All players have some initial endowment e and can make any contribution to a public good c. Their decisions are made simultaneously, so no one knows about the others' decisions in advance. Then their pay-off utilities are calculated as following:

$$U_i = e_i - c_i + \alpha \sum_{i=1}^{n} c_i \text{ with } 1/n < \alpha < 1$$

Here the parameter α represents the return factor of the public good. For the iterated public good game this utility function applies for all stages and all players of the game. As the pay-off of the public good term is driving the utility, but the contribution is diminishing it, the dominant strategy would be to free-ride, i.e. to profit from the public good but, if, possible secretly avoid one's own contributions. In politics the prime examples for the dilemma are public roads and national defence. Everyone benefits from such institutions, but as the individual can only make a small contribution there is little motivation to pay. Obviously, taxes are the standard solution to overcome the dilemma in these cases. However, other examples for the public good such as environmental issues cannot only be solved by raising taxes. Here it is more effective to set incentives for the individual so that the public good is not exploited. Experimental evidence shows that a punishment option increases the general level of contribution in these social dilemma situations.[62] However, there is a strong difference between partners and strangers matching in terms of the public good game design. In a partner's matching the overall contributions are significantly higher.[63] This evidence

can be rationalised with strategic behaviour, as the partner's setting allows for establishing reputation. Hence there is a hidden incentive for cooperation, because initial cooperation conditions the other players to follow the example of cooperative actions. According to the game theoretic analysis, a self-interested individual should not cooperate in any of the rounds considered separately. But interpreting the repeated encounters with the dilemma situation as one new game facilitates Nash equilibriums which include cooperative behaviour. As outlined in Chapter 5 social norms can also be a powerful mechanism to avoid the free-riding problem. Other important dynamic games are for example the ultimatum game and the corresponding dictator game. But as their resulting evidence focuses on the formation of social preferences, the discussion is postponed to Section 5.2.

3.3 Game theoretic extensions for order ethics

Based on the various games just introduced and the game-theoretic rationale underlying cooperation, some open issues in order ethics with regard to cooperation are pointed out. Consequently, some extensions are discussed in the form of additional games, more complex games and more differentiated solution concepts. In addition, the scope of self-interest is taken up with relation to its game-theoretic foundation and the conceptualisation in order ethics.

3.3.1 Games, timing and information in order ethics

Order ethics is adhering to the prisoner's dilemma as the main game played in economics. This focus is discussed with reference to game-theoretic necessities and the implications of extending order ethics to different games are highlighted. In particular, additional dilemma structures, dynamic games and game information structures are presented as suitable extensions for the current accounts of order ethics.

Order ethics is a theory based on social contract theory and mutual consent.[64] Thus it puts an emphasis on human cooperation and demands that morality must enable all desirable cooperation.[65] After all, social cooperation usually leads to mutual advantages.[66] Thereby, order ethics identifies the prisoner's dilemma as the most important representation of economic action.[67] Alternative games, as for example the other-regarding game, the assurance game and the stag hunt game are considered to be less stereotypical for economic encounters.[68] However, the focus on the prisoner's dilemma is precarious. As already outlined in this chapter there are other games, which are also relevant representations for certain economic situations. Thus the whole of economics or morally relevant economic situations cannot be reduced to the simple prisoner's dilemma.[69] This is the first necessary extension of order ethics regarding the variety of games. However, some recent works on order ethics have also identified this potential extension and postulate a distinction between coordination games, mixed-motives games and general zero-sum games.[70]

Another issue in order ethics is to often disregard the temporal structure of games. With the focus on the static prisoner's dilemma, dynamic games which allow for a more detailed and realistic representation of economic situations are unfortunately neglected.[71] Coming to dynamic games in order ethics, Lütge has already touched the game-theoretic criticism of interpreting the economy as a static game such as the prisoner's dilemma. He points out that iteration of games introduces the opportunity to sanction behaviour and thus fulfils one of the central claims of order ethics.[72] However, a more thorough treatment of sanctions is necessary to understand its dynamics. This should be another crucial point for the extension of order ethics. Moreover, analogous to the collection of static dilemma structures representing real economic situation, a collection of the most important dynamic games is deemed necessary. Finally, in addition to punishment, dynamic games are the basis for reciprocity and conditional cooperation, which will be discussed in Section 3.3.3.

A third challenge for order ethics resulting from the focus of the static prisoner's dilemma is that it implicitly assumes perfect information. So Lütge himself points out that every theory of social contracts has to deal with the knowledge and information of its actors.[73] With reference to game theory, incomplete or asymmetric information constitutes a serious challenge for order ethics. For, instead of complete information, reality and real markets are more likely to reflect states of private information.[74] In reality imperfect information propels moral hazard based on hidden actions. However, the game theoretic structures of private and incomplete information are currently not integral to order ethics.[75] But only with incomplete information can relevant concepts for decision making such as risk and ambiguity be formalised. Hence order ethics also needs to start discussing games of incomplete information in order to recognise the associated challenges.

In conclusion, analogous to behavioural economics, order ethics must move on to developing more elaborate games to capture and analyse the essence of human cooperation. Even though the prisoner's dilemma is a popular and very useful dilemma structure, focusing on the prisoner's dilemma too much does exclude important features of economic exchange and cannot capture all morally relevant economic interactions.

3.3.2 Strategies and equilibrium selection in order ethics

Another omission of current order ethics is the focus on the Nash equilibrium concept. Here, in the first place, order ethics misses out on the identification of many potential equilibriums, as it does not consider mixed strategies which can extend the set of rational strategies. Moreover, for pure strategies it only considers Pareto-efficient equilibriums. But alternative equilibrium concepts also based on the full rationality assumption are often necessary to fully grasp a game structure. Hence risk dominance and focal points are emphasised as additional solution concepts for games in order ethics and the arising implications for equilibrium selection are pointed out.

Additional games also entail new challenges, as they can exhibit more complex structures and involve mixed strategies which are excluded from the prisoner's dilemma. Lütge broaches this problem by arguing that altruistic and randomised actions do not significantly affect the economic order.[76] But nevertheless, randomised actions have a significant effect on the outcome and strategy selection in economic games. After all, even though order ethics bases its analysis on the Nash equilibrium as the primary solution concept to economic interactions based on full rationality, it neglects mixed strategies. However, under the assumption of full rationality, randomised actions are inevitable, because a lot of games do not exclusively have pure equilibrium strategies. As already outlined in Chapter 2 a mixed strategy can be conceived as using some random device to decide between two discrete strategies. Therefore the necessity of mixed strategies is very likely if games other than the prisoner's dilemma are analysed, as already postulated in this book. Moreover, the usage of mixed strategies requires an important ethical discussion, which cannot be ignored. These solutions use chance to determine a course of action which is difficult to incorporate in any ethical theory. Thus order ethics needs to offer a treatment of mixed strategies even more.

Allowing for a bigger variety of games in order ethics and introducing mixed strategies increases the number of equilibriums. Thus order ethics necessitates some treatment of how to deal with multiple equilibriums. Therefore additional equilibrium selection criteria need to be integrated with order ethics. Drawing from standard game theory as illustrated in Chapter 2, risk dominance and focal points are the obvious and most powerful extensions. For risk dominance providing a sound principle to weigh off Pareto-efficiency and risk efficiency is necessary. Both selection criteria cover morally relevant dimensions and thus apply to the choice in games of economic ethics. The same holds for focal points, which are especially helpful, if there is a huge number of equilibriums.[77] Similarly, trembling hand equilibriums adequately account for agents' risk aversion and situational uncertainty.[78] Thus they offer another sound alternative to the standard Nash solution. Having such a manifold of equilibriums and potential solutions, order ethics needs to develop a theory for prioritising the different selection criteria. The standard approach is to choose the Pareto-efficient equilibrium, but in complex games focal points and risk dominance are sometimes more applicable. Especially, if games have too many equilibriums, focal points often become the most practical means for coordination. Similarly, already simple coordination games such as the stag hunt game prove that most players often choose risk dominance over efficiency.

3.3.3 Conditional cooperation and punishment in order ethics

In the following, it is argued that the assumption of strict self-interest in order ethics can be relaxed on the grounds of behavioural economics. Instead cooperation and competition are considered as alternative views taken from behavioural economics. This goes along with considerations of conditional cooperation and

reciprocity. However, the conclusions drawn here are still consistent with the game theoretic framework and especially the critical assumption of full rationality.

Similarly to efficiency, competition is not a vice as such, but only a case of cooperation under certain conditions. Competition is cooperation under the rules of market-governed economies. In fact, compared with cooperation, competition can yield more efficient, i.e. welfare-improving, outcomes. This is why both competition and cooperation can yield substantial economic benefits.[79] But without doubt competition has to be governed or constrained by some additional ethical concerns; a lot of these constraints are already incorporated in economics theories as a form of strategic interest. Altogether, one can perceive cooperation as the interplay of material incentives and individual values.[80] Furthermore, as seen with the example of the altruist's dilemma game, altruism can impose problems for efficiency. Moreover, altruistic actions and social preferences are an empirical fact and thus cannot be neglected as economically irrelevant.[81] With regard to order ethics and cooperation the central question is whether there is a conflict between self-interest and morality. General economic benefits from cooperation are maintaining social norms, information sharing and, perhaps most importantly, risk reduction. The economic approach to cooperation is stated as: "the scope of cooperation is explained by the strength of the incentives to preserve one's reputation in repeated interactions, relative to the temptation to cheat."[82] Evidently, the focus here is yet again on repeated games which are the prerequisite to reputation building and long-term incentives. As dynamic games are not yet incorporated into order ethics, I postpone the discussion of reputational effects to Chapter 7. Nevertheless, order ethics tries to take up the game theoretic argument focusing on mutual benefits.[83] This comes natural to the theory, as it is based on a very wide and open notion of benefits. Thus it can integrate the strategic conception of benefits as found in dynamic games.

More generally, as cooperation is usually mutually beneficial it can be rectified by morality as well as self-interest.[84] Thus, it is necessary to determine the exact relation of cooperation and individual self-interest to explore the underlying rationale. Here, Smith stated with regard to individual maximisation: "by pursuing his own interest, he frequently promotes that of the society more effectually than when he really intends to promote it."[85] This antedates the order ethics argument of self-interest being the key to desired cooperation. So many economic encounters are motivated by the underlying win-win structure of incentives.[86] Unfortunately, that is not always the case as the previous considerations of public good games have proven. However, game theoretic arguments for the importance of mutual sympathy can also be found in the works of Sen and Binmore.[87] Another game-theoretic advantage cooperation yields is information sharing, which can increase overall efficiency. Moreover, deviations from strict self-interest might be economically rational, because they enable risk sharing and risk reduction for the individual. This relates back to risk dominance as an important criterion for equilibrium selection. Finally, many moral norms are backed up by successful long-term cooperation.[88] Hence cooperation remains

one of the central pillars in economics and ethics, but as the preceding remarks have shown the notion of cooperation is very versatile with regard to game theory.

This leads from self-interest to the concept of reciprocity which emphasises the mutual nature of cooperation. Hume recognised that most cooperation originates from the concept of reciprocity.[89] Thus it is only logical to pursue the impact of reciprocity on the assumption of self-interest. First of all, strict reciprocity is a very basic trait of human character.[90] So some foundations of ethics can be retraced to reciprocity by means of game theory. For example, in the field of evolutionary game theory economic behaviour can experimentally be shown to correspond with the "golden rule" of ancient ethics.[91] This manifests an ethics of reciprocity. Moreover, strict reciprocity can also evolve from reciprocal altruism.[92] Second, conditional cooperation is the even more natural form of cooperation.[93] It accounts for some self-interest in form of strategic behaviour. Generally, people rely on conditional preferences when making judgements about social norms.[94] Behavioural economics is also inherently concerned with a perspective on reciprocity.[95] There are two ways of understanding reciprocity, i.e. as intrinsic reciprocity or instrumental reciprocity. The former one assumes non-self-interested individual preferences. The latter is based on the intuition of forming reputation in repeated interactions.[96] Both forms of reciprocity in this sense implement conditional cooperation. One central finding in behavioural economics with regard to cooperation is that it highly depends on social proximity.[97] So there is virtually no uncooperative behaviour between relatives and higher social connectedness also results in higher trust and cooperation rates.[98] However, as economics ethics in general and also order ethics aim at constituting universal principles, the following remarks focus on anonymous market interactions, where cooperation cannot be established that easily.

Moreover, conditional reciprocity can be employed to affect moral accounts, which is very similar to the policy account advocated in order ethics. One design aspect increasing the level of cooperation is the opportunity of punishment. The most basic feature in this regard is peer punishment, i.e. players mutually punishing each other.[99] An experimental study comparing the public good game with and without a punishment option found striking evidence for the effectiveness of this new feature to enhance cooperation.[100] These results can be taken from Figure 3.2, where they indicate that normal game play converges to an average contribution to the public good of 15 per cent, whereas the punishment option facilitates an equilibrium contribution of 90 per cent. That is an improvement of almost 700 per cent, even though both scenarios start on a similar level of public good contributions. Hence using strategic incentives, a minority of cooperative individuals with a punishment option can shape a social outcome also to be cooperative.[101] This is also in line with the standard accounts of order ethics, where incentives are aligned to the moral outcome under the conditions of competition.

Having a closer look at the data, one also finds that in experimental games players can be distinguished into different behaviour types. For example, in the

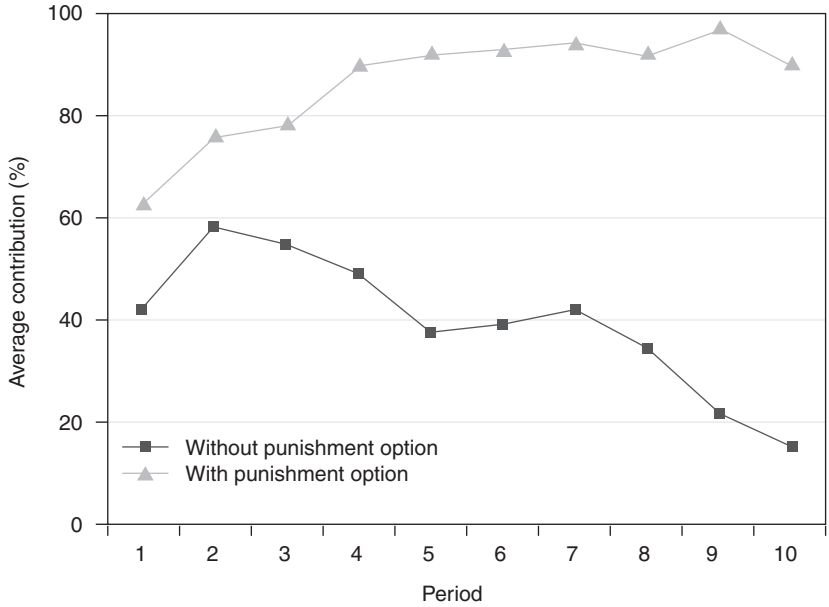

Figure 3.2 Public good game with punishment option.

public good game most of the population can be classified as either free-rider or conditional cooperator.[102] By the way, this also confirms the existence of conscious or unconscious strategies, which most players consistently follow; otherwise a classification would not be possible. Thus in public good games, conditional cooperation can be incentivised by a punishment option. Even more efficient are mechanisms of group punishment, where the final decision is approved by at least two members.[103] Neuroeconomic evidence even suggests that people derive non-pecuniary utility from mutual cooperation and punishing unfair behaviour.[104]

Punishment becomes particularly effective as a response to perceived and transparent unfairness.[105] Therefore punishment options are a design feature for order ethics, which are again taken up in Section 7.2. Punishment is not the only serious variable shaping cooperation. Trust and reputation can also be used to design and incentivise cooperation. Therefore cooperation can also serve as the theoretical foundation for learning social norms.[106] After all, cooperation itself constitutes a social norm.[107] However, the exact mechanisms underlying cooperation are still subject to further research. So for example, neither reputation nor pure altruism can fully explain the data observed in finitely repeated prisoner's dilemmas.[108]

Concluding the examination of order ethics with regard to cooperation in game theory and behavioural economics, there are some extensions to begin

with. Order ethics derives many arguments from the standard prisoner's dilemma which is only one particular static game. It is sufficient to motivate the underlying social dilemma, but more games and more complex dynamic structures are necessary to represent all real economic interactions. Moreover, order ethics does not yet incorporate considerations of risk dominance. The reliance on Pareto-efficiency as the sole criterion for equilibrium selection precludes it from finding and accounting for alternative equilibriums in various classes of games. This is particularly eminent, as empirically most human beings act risk averse in economic contexts. Hence risk is a critical variable shaping our decisions. Finally, order ethics should be extended with the focal point concept, which can also be very important for the determination of equilibriums in coordination games. This has probably not been discussed yet, as focal points only gain relevance in more complex games, where the equilibrium structure is not as apparent as in the basic social dilemma games. However, the analysis also shows that the order ethics approach of changing regulation by means of incentives, and in particular negative incentives such as punishment, can help governing collective behaviour towards equilibrium states of higher efficiency. Finally, it has been shown that conditional cooperation is a behaviourally more sound representation of human behaviour than strict self-interest. Experiments from behavioural economics demonstrate that many decisions are motivated and driven by conditional cooperation and reciprocity. This does not mean that self-interest is not a behavioural driving force or an inadequate assumption. Behavioural economics only shows that naive or strict self-interest is not sufficient to fully capture the complexities of human decision making in economic interactions. Instead self-interest is refined with the strategic dimension of game theory and accordingly conditional cooperation and reciprocity are still grounded in human self-interest, but they are more versatile. In the end this is very close to the conception of self-interest advocated in order ethics. In order ethics incentives must govern human behaviour. In this regard, the conception of cooperation based on behavioural economics only dispenses with the appeal to strict self-interest as a means to that end. Instead it introduces a form of strategic self-interest, which guides economic decision making. This strategic self-interest can also be the basis for the design of incentives as understood in order ethics. It only offers a more complex and more accurate foundation and still contains strict self-interest as an extreme case of rather naive and unstrategic behaviour.

4 Rationality in economic ethics

Anything that gives us new knowledge gives us the opportunity to be more rational.

(Herbert A. Simon)

The most central concept underlying both economics and ethics is that of rationality. Even though there are various distinctive accounts of rationality in ethics, the focus is put on the most basic definitions of instrumental rationality and full rationality.[1] Therefore this chapter starts with a critical assessment of classical normative rationality concepts in ethics and economics. Based on the empirical shortcomings of this account the concept of bounded rationality is introduced and illustrated. Finally, the centrality of rationality for order ethics is pointed out and various conceptions of rationality are discussed against the background of order ethics.

4.1 Instrumental rationality in ethics and full rationality in economics

First of all, the tradition of rationality is exposed with regard to ethical theory and in particular utilitarianism. Then the normative conception of full rationality in classical economics, neoclassical economics and game theory is presented. Moreover, its limitations are highlighted, leading over to the descriptive account of bounded rationality.

4.1.1 Instrumental rationality in ethics

In ethics, rationality goes back to the ancient Greek philosophers and the according epistemological position of rationalism.[2] Rationality encompasses the idea of having "good" reasons for one's actions. So it is assessed in the interplay of reasons and actions. This "worship of reason" is a central element of all ethical theories, rendering rationality a key feature of human nature.[3] For a long time rationality was only discussed as a qualitative concept, and its formalisation was not started until in 1638 the pivotal discipline of maximisation was born, when

Fermat sent Descartes his breakthrough in the theory of extreme values, i.e. the first derivative.[4] Thus the simplest definition of rationality only demands the maximisation of some (utility) criterion.[5] This reduces rationality to individual greed as a universal reason.[6] At the same time modern rationalism as a metaphysical dualism was founded.[7] On this account rationality is defined as necessary knowledge. Hume has opposed the idea of rationalism with his theory of empiricism.[8] Consequently, he argues that rational moral agency is not "conclusion of our reason".[9] In response Kant resurrected the central position of rationality with his doctrine of transcendental idealism.[10] On his account rational means that moral agents are able to choose the appropriate means to achieve some desirable ends. As a consequence of this instrumental conception of rationality, ethics can only apply to rational beings.[11] Overall, in the tradition of moral philosophy rationality can also be conceived as self-interest.[12] Or it can be identified as autonomy in the pursuit of certain ends.[13] So rationality is a "sense of unlimited power to realise our wishes."[14]

Coming to a contemporary definition of rationality, one can differentiate the following three degrees of rationality:

1 weak subjectively rational belief
2 strong subjectively rational belief
3 objectively rational belief.

Weak subjectively rational belief only needs to be logically consistent. It has to operate by the laws of probability given some beliefs without questioning the probability or conclusiveness of the beliefs. Strong subjectively rational belief has to fulfil the former requirements and must in addition use all available information in forming the belief. Thus on this account the probability of the beliefs being adequate or correct should be higher than according to the first definition. For objectively rational belief, the belief must be factually correct, e.g. if someone finds a bottle of poison with a warning sign and yet drinks it. That can still be a case of weak subjectively rational belief, but none of the others. If someone finds a bottle of poison which has the appearance of a water bottle and the same smell and taste as water and one drinks it, then that is still a strong subjectively rational belief. But in this scenario the belief of the beverage being water is only objectively rational if it really is water, no matter what the available information suggests. Here the first two concepts focus on the procedures of rational reasoning, whereas the last one assesses rationality in terms of outcomes.[15] Rationality based on procedures only is the dominant view in ethics which can also be referred to as instrumental rationality. Instrumental rationality is primarily a normative notion and dispenses with the morality of ends. Outcome oriented rationality is usually the standard for economic theories according to the rational choice paradigm. Following the higher requirements it assumes for human reasoning, it can be denoted as full rationality and is expounded in the next section.

4.1.2 Full rationality in neoclassical economics

Neoclassical economics is based on the normative conception of full rationality; in particular it is based on the paradigm of rational choice and Bayesian decision theory. This is also the rationality conception used in utilitarianism.[16] Utility is the concept most natural to economics. And rationality and utility are inextricably linked in all economic decision making. On this account only consequences are morally relevant for the judgement of actions.[17] Thus utilitarian ethics and full rationality are de facto a combination of the Bayesian rationality conception and Pareto-efficiency.[18] Assuming this neoclassical individual rationality, strict self-interest and perfect competition, economic theory generally predicts Pareto-efficient outcomes.[19] On this basis a first definition of rationality within economics states: "individual rationality is a self-aware, calculating process of maximisation."[20] Moreover, in economic models rationality becomes manifest in the concepts of preferences and intentions. Thus rationality requires us to have non-contradictory beliefs and intentions.[21] This means forming beliefs which are essentially expectations of future events and outcomes. The beliefs give us a likely evaluation of future states and then allow for eliciting preferences conditional to these beliefs.[22] More precisely, individual preferences form the reasons of rational economic decision. And optimising utility is its most natural and rational objective. Coming to economic models, full rationality can be formally defined as "consistent maximisation of a well-ordered function, such as a utility of profit function."[23] With regard to the scale and shape of the utility function there are various opinions in the literature. One central discussion since the 1950s deliberates about the differences in cardinal and ordinal utility functions.[24] Here the problem is that cardinal utility functions are much more powerful for the formal analysis. After all, they allow for interpersonal aggregation or comparison of utility levels. However, the ordinal scale is the more empirically realistic view on utility functions, but usually more difficult to interpret.

Formalising individual rationality from an economics perspective relies on four basic assumptions: independence of preferences, transitivity, dominance and invariance. The first principle of rational choice in decision theory and game theory is independence and stability of preferences.[25] It states that any additional information cannot *ceteris paribus* affect a decision, i.e. preferences should just be depending on relevant pay-offs and not on situational factors. Transitivity as a second principle is also concerned with the consistency of preference ordering. So when I prefer A over B and prefer B over C, I also have to prefer A over C. Neglecting transitivity would lead to a logic of the "money pump". Without this assumption one could exchange goods with another person and then arrive at the initial distribution with profits for everyone. Such a conclusion would be a clear violation of rationality. The third principle, dominance, is a straightforward assumption for models of rational choice. It merely states that preference for A over B is constituted by the fact that the valuation of A is at least as high as that of B for all states of the world. Finally, invariance is a central condition. It formalises that different representations or framings of the

same decision should leave the decision maker invariant, i.e. always inferring the same decision.

Moreover, for the discussion of rationality one can usually distinguish between situations of certainty, risk and uncertainty. Certainty means knowing the outcome of a situation, risk means knowing the objective probabilities of alternative outcomes and uncertainty means not even knowing probabilities.[26] As uncertainty is rather the rule than the exception in real-life decisions, it is the focus for the scope of this book. This means dealing with subjective probabilities.[27] In economic theory the agent's preferences are stable and they only change obeying the rules of Bayesian information learning. Therefore it is sometimes also called "Bayesian rationality".[28] The main application of Bayesian rationality for decision making is expected utility theory (EUT). EUT applies for decisions under risk or uncertainty and maximises the utility based on some probabilities or probability distributions.[29] Moreover, according to Bayesian probability theory players should strictly distinguish between beliefs and preferences.[30] Preferences are the dispositions of choice and beliefs the probabilities attached to them.

Homo oeconomicus and game theoretic equilibrium

All these different aspects of rationality in neoclassical economics have led to the allegory of a Homo oeconomicus. Whilst Smith has stressed the importance of individual self-interest in pointing out the motivation of the butcher, brewer and baker,[31] the basic formulation of the Homo oeconomicus can be retraced to utilitarian ethics, here in particular to Mill, who writes about the human as subject of political economy: "it is concerned with him solely as a being who desires to possess wealth and who is capable of judging the comparative efficacy of means for obtaining that end."[32] With specific regard to the utilitarian doctrine he has also stated that: "it makes entire abstraction of every other human passion or motive, except those which may be regarded as perceptually antagonising principles to the desire of wealth."[33] The Homo oeconomicus still complies with this original perception. Accordingly, in neoclassical economics rational economic agents are idealised as having stable preferences and infinite computational powers, aiming at the perfect maximisation of utility.[34]

Comparing full rationality and instrumental rationality, it is evident that instrumental rationality as a minimalist approach must be part of every other rationality definition.[35] Game theory originates from the normative conception of full rationality. Moreover, rationality in economics has also to be understood as a social phenomenon based on interaction. This kind of rationality is captured in the idea of game theoretic equilibriums, based on revealed preferences, which is central to microeconomic theory.[36] Overall, game theory assumes the world to be a collective of Homines oeconomici possessing infinite processing power for perfect decision making. Hence full rationality is the standard assumption for the behaviour of players in game theory.[37]

4.1.3 Limits of rationality and utility

Having outlined the classical accounts of rationality in ethics and economics, their adequacy needs to be discussed. Altogether, there are three lines of argument attacking the assumption of full rationality in economics. First of all, experimental evidence can refute all four axioms of rationality in the paradigm of rational choice theory. Second, experiments prove that humans are not mere utility maximisers, but base their decisions on other factors such as social preferences, which particularly relates to game theory. And finally, the evidence suggests that our cognitive and computational capabilities are seriously constrained, which also has implications for an adequate conception of rationality.

Regarding the first point, there is a lot of evidence for violations of the axioms of rational choice theory. Transitivity is not always obeyed by human decision makers.[38] In more detail the independence of preferences is refuted, because in lotteries the addition of one identical alternative to two lotteries can change the preference towards either of the lotteries.[39] So preference reversal is an example for experimentally observed violations of the rational choice paradigm. In the respective experiment subjects have to choose a preference between two objects A and B. Subsequently, they are asked to state their minimum willingness-to-accept price for A and B. In theory, if one prefers A over B, one should have a lower minimum-willingness-to accept price for B. Typically, 24–68 per cent of subjects contradict this rational conjecture.[40] Therefore one can convincingly argue: "persons do not simply emerge full blown with well-defined preference orderings over all potential alternatives for choice."[41] Experimental evidence also proves that people have different valuations, if they have to evaluate two products separately, respectively simultaneously.[42] Violations of the dominance axiom can be found whenever people have different risk attitudes.[43] Furthermore, framing effects are the prime example taken from experiments against the standard assumption of invariance.[44] Framing effects are an exogenous factor of bounded rationality. The framing can occur in various ways. First of all, the framing of consequences in terms of losses or gains has a severe impact on the resulting decision, as it activates risk proneness in the former and risk aversion in the latter case.[45] Second, the framing is relative to some reference points, which are highly relevant to the evaluation of decisions.[46] In conclusion, Kahneman stresses that: "framing effects are not a laboratory curiosity, but a ubiquitous reality".[47] In order to operationalise a real-life situation one has to somehow frame the resulting decision. So every decision which is accessible is already inevitably biased. Therefore it is helpful to scrutinise the potential effects of this bias to balance it. One practical example of a framing effect can be found in the advertisement of bank loans. Here it can be found that the willingness to pay a high interest rate strongly depends on the framing of the advertising.[48] Moreover, individuals clearly violate principles of rational choice when it comes to statistics. For example, in the "Bernoulli experiment", a repeated choice between two occurring events A and B has to be made. Here the probability of A is much greater than that of B and the choice task is repeated for up to 1000 times. Under

the exogenous condition of $p(A) >> p(B)$, it is the best decision theoretic strategy to always choose A to maximise the expected utility. Yet people always employ some mixed strategy of sometimes choosing B.[49] A similar problem for the application of strict rationality is the conjunction fallacy which exhibits the widespread inability of applying the Bayesian rules of probability.[50] It relates to the ancient discovery of syllogistic and naturalistic fallacies which have already precluded that full individual rationality is difficult to accomplish.[51]

With regard to the assumption of utility maximising behaviour, economic models often derive implausible predictions, when tested in the laboratory.[52] Regarding the scope of expected utility theory and game theory as well as instrumental respectively full rationality, it needs to be stressed that maximisation is not necessarily optimisation. According to these theories the best overall alternative must not have been identified and so only the best alternative of a given set is identified.[53] For example, in the ultimatum game the only rational distribution should be $(\varepsilon, n-\varepsilon)$.[54] Here rational means the prescription of ααthe game theoretic Nash equilibrium, where a player should only offer the smallest possible amount of money ε.[55] Based on the axiom that the responder prefers more money over less money, he should accept every infinitesimal offer. Of course this abstracts from behavioural considerations such as fairness and social preferences. Hence a player in the sense of full rationality would not have any incentive to give his opponent more than necessary. But in fact players prefer a fairer distribution of shares in the Aristotelian sense of proportionality.[56] As a result, both proposer and receiver violate the paradigm of rational choice. This conclusion is backed by a vast literature on ultimatum games in experimental economics.[57] In general, it is often confirmed, that traditional models of rational choice do not fully reflect the nature of human behaviour.[58] The empirical violations are too systematic and obvious as to be ignored. Overall, the laboratory evidence simply defeats the classical theory of rational choice.[59] In addition, there are a lot of intuitive arguments against the conception of a Homo oeconomicus. Why would people raise children, donate money, help friends or care for others, if they only were rational maximisers of pay-offs or utility? But unfortunately, for a long time the Homo oeconomicus was the only idea of humankind consistent with the mathematical models of economics. In conclusion, any theory based on the assumption of fully rational decision making cannot reflect actual behaviour.[60]

4.2 Bounded rationality in behavioural economics

According to the literature on decision analysis the normative and descriptive conception of rationality should be viewed as separate enterprises.[61] Normative rationality concepts are very useful from a theoretical point of view, but they cannot suffice in explaining real human behaviour. With regard to behavioural economics and experimental evidence the violations of normative rationality accounts are too systematic and too severe to be ignored.[62] Thus more sophisticated concepts of rationality as proposed in the literature on bounded rationality are necessary.

4.2.1 Origins of bounded rationality in behavioural economics

From the point of behavioural economics, Smith explicitly distinguishes two competing forms of rationality in economics, i.e. the classical constructivist perspective and the ecological or bounded rational form.[63] The concept of bounded rationality intimately connects ethics, economics and psychology. Bounded rationality goes back to research in cognitive psychology.[64] But the concept itself and its application have also been discussed in the economic literature since the 1950s.[65] As a matter of fact, the essential notion of bounded rationality has coevolved with the paradigm of behavioural economics.[66] It tries to depict a conception of rationality, which accounts for limited access to information and limited human computational faculties.[67] Consequently, one key proposition of behavioural economics is that the assumption of full individual rationality needs to be relaxed and reformulated, in order to theorise on exact representations of human decision making and interaction.

Now, broad experimental evidence confirms that the normative rationality concepts of both decision theory and game theory strongly deviate from what must be called the essence of human rationality.[68] Whilst psychology is classically concerned with the cognitive limitations underlying rationality,[69] economic theories explicitly model rationality and more recently bounded rationality.[70] Similar to instrumental rationality in ethics bounded rationality is sometimes also denoted as a concept of "procedural rationality", because it locates requirements of rationality in the realm of decision making and not in the ends of those decisions. The whole process is based on information gathering, which is not costless, and thus there must be a constraint on the amount of information, i.e. alternatives from an economic and psychological point of view.[71] With regard to human capabilities, the idea of bounded rationality, as conceived by Herbert Simon is essential. According to him:

> the task is to replace global rationality of economic man with a kind of rational behaviour that is compatible with the access to information and the computational capacities that are actually possessed by organisms, including man, in the kinds of environments in which such organisms exist.[72]

Therefore economic models have to be adapted to the behavioural reality, i.e. "to predict how economic man will behave we need to know not only that he is rational, but also how he perceives the world – what alternatives he sees and what consequences he attaches to them."[73] Rooted in behavioural economics, bounded rationality also has various interconnections with game theory.[74] With regard to the rationality assumptions of game theory, Simon remarked:

> The psychological limits of the organism (particularly with respect to computational and predictive ability), actual human rationality-striving can at best be an extremely crude and simplified approximation to the kind of global rationality that is implied, for example, by game-theoretical models.[75]

Here the game structure in terms of information and the nature of the participating players is affected by the assumption made regarding human rationality. So with regard to human nature, boundedly rational agents may not maximise at all.[76] This observation has left game theory with the dilemma that the mathematical analysis of game theory demands rationality requirements, which real-world individuals or organisations apparently cannot fulfil.[77] Furthermore, the insights derived from bounded rationality have significant ramifications for economics and game theory. For example, Camerer has recently started to merge the conceptions of bounded rationality and classical game theory in his approach of "behavioural game theory".[78] This approach is designed to theorise on the experimental evidence on decision making and finding the right dose of rationality. Thus it tries to adapt traditional game theory.

The key problem with bounded rationality remains that it cannot match strict rationality in terms of simplicity and applicability. Also it lacks a unifying theory to capture the various departures from rational choice predictions. Nevertheless, there has already been a lot of research exploring the details of bounded rationality. Hence the following section gives an overview of the central concepts and theories.

4.2.2 Concepts and theories of bounded rationality

The origins of bounded rationality and especially Simon's work were conceptual rather than formal. However, by now especially economics and behavioural economics research has formalised the concept of bounded rationality. Bounded rationality becomes manifest in the three cognitive systems: perception, intuition and reasoning.[79] With regard to experimental evidence Selten devises three corresponding classes for the definition of bounded rationality: motivation, adaptation and cognition.[80] The first class deals with heuristics and theories of decision making under uncertainty such as prospect theory. The second focuses on theories of learning and alteration of behaviour. Finally, the purely cognitive dimension poses psychological research questions which can also be related to behavioural economics. However, I concentrate on motivation and adaptation for the following considerations. Motivation based on perception comprises basic behavioural biases and intertemporal discounting behaviour. Then adaptation is explained in terms of heuristics, satisficing behaviour and learning theories. At last, prospect theory as the central theory of bounded rationality is introduced.

Basic biases and intertemporal discounting

Biases such as the *overconfidence* or *optimism bias* exhibit the bounded rationality of human nature. They illustrate that people are unrealistically optimistic about their own judgements. One prominent example of overconfidence is the "winner's curse" as commonly shown in experimental and real auctions.[81] Here the highest bidders are overconfident enough that the good at auction is worth more than most, or in fact all other bidders predict. With regard to individual

savings and savings ethics the overconfidence bias is especially fatal, as a lot of saving decisions are only one-shot or rarely repeated decisions with little opportunity for learning effects. Therefore, the advice of experts should be very valuable for this type of decisions, but again the understanding of needing advice interferes with the overconfidence bias. Another related bias is the *status quo bias*.[82] It illustrates the basic human inertia of being satisfied with the status quo which also means slow adaptations to change, even when change is an urgent matter.

Similar to violations of preferences as already discussed, human beings can be shown to make frequent mistakes in the evaluation of the same object with regard to two different points of time. This results in the problem commonly known as hyperbolic discounting.[83] Here, people usually overvalue the present and tend to unconsciously use *hyperbolic functions* to discount future utility.[84] So when confronted with a choice between taking $100 today or $110 in a year, most people opt for the cash today. But when framing the decision as either $100 in a year or $110 in two years, people can resist the urge of immediate gain and prefer the second, more 'rational' alternative. Hyperbolic discounting is also important to economic ethics and business ethics, as the concept of discounting is relevant to virtually all financial decisions, where some rate of interest or opportunity interest needs to be incorporated in the decision rationale. In addition, the issue of intertemporal choice is also susceptible to framing effects.[85] Moreover, intertemporal decisions constitute the problem of *myopic loss aversion*. Here investors are not willing to realise losses in their portfolios and generally consider time intervals in their portfolio evaluation that are too small.[86] Experimental studies show that even frequent feedback cannot overcome the problem of myopic loss aversion.[87] But the mode of presentation can be taken to resolve the problem. So framing stocks' rates of return for more than one year corrects much of the irrational behaviour.[88] From an economic perspective the underlying problem of self-control can be modelled as two personalities constituting a decision maker, i.e. a myopic doer and a farsighted planner.[89] This model focuses on the underlying phenomenon of procrastination as still discussed in the literature.[90] Accordingly, people have some sort of inner conflict, whenever they have to weigh present pleasure against future pleasure. Here, the myopic doer can be stylised as a pure hedonist and the farsighted planner as a prudent person in the Aristotelian tradition. Ultimately, the rationality towards intertemporal decisions has strong moral implications, most importantly because it affects the problem of subsequent generations. As it is common practice in most Western economies to have budget deficits and thus increasing public debt, a lot of economic problems are shifted into the future. Based on bounded rationality such behaviour can be explained with hyperbolic discounting, but unfortunately the economic laws just compensate for exponential discounting. Hence most societies are indulging in the present without realising the responsibility and burdens they impose on future generations.

Heuristics, satisficing and learning

In economics Hayek has postulated that human knowledge and reasoning are limited, and therefore one needs to follow rules.[91] Technically, rules of decision making are commonly referred to as heuristics, which are a key feature of bounded rationality to approximate optimal decision. The most important heuristics in bounded rationality are representativeness, availability and anchoring.[92] With the representativeness heuristic, people neglect statistical base rates and Bayesian laws. Instead, they evaluate probabilities of an event according to some common but not necessary characteristics. The availability heuristic accommodates the fact that people overvalue the probability or reliability of information, only because it is easy to imagine. Finally, the anchoring heuristic is based on a first guess or a random number. Here people only slightly adjust their judgement based on the first anchor. More contemporary concepts include fast and frugal heuristics, which are based on the new concept of ecological rationality.[93] This approach is still discussed and advanced in the literature.[94]

The idea of bounded rationality as a form of satisficing goes back to Simon.[95] He has also tried to establish the first comprehensive and formal theories of satisficing.[96] However, now behavioural economics intensely discusses the formation of aspiration levels.[97] The general idea of satisficing is to replace the assumption of fully rational optimisation with that of forming aspiration levels. Here, the concept of "aspiration levels" is employed to represent the human inclination to be satisfied with nearly optimal solutions. Satisficing can also be applied to game theory and experimental economics, for example as a potential explanation for the behaviour typically observed in ultimatum games.[98] So decisions are no longer characterised as optimal or not optimal, but rather as satisfactory and unsatisfactory.[99]

Another interesting argument is put forward by Smith. He claims that economic decision making is not only a result of applying rational powers, but it is the product of social learning practice. Every child starts with learning its native language and some simple principles of decision making. Later these decision skills are transferred and adapted to economic decisions. So a theory of decision making can never be sensibly separated from the social and psychological context.[100] The first approach that relies on learning as a model for bounded rationality to analyse game-theoretic equilibrium formation was proposed by Fudenberg and Kreps.[101] Similarly, Roth and Erev use a model of adaptation as reinforcement learning. With their model they can explain a lot of experimentally observed behaviour in repeated games.[102] Yet another way to model adaptation by means of game theory can be trial and error learning[103] or more generally evolutionary learning.[104] One critical aspect of all new theories of bounded rationality with regard to behavioural economics is whether they are absorbable. The idea of absorbable means that their functioning is not affected by learning or an agent's knowledge of the exact functioning of the mechanism.[105] But whilst neoclassical economics assumes the same perfect choice independent of any learning opportunity, behavioural economics accentuates the fact that decision

making is largely based on learning. As a matter of fact, most experimental evidence also corroborates that decisions change over time.

Prospect theory

A less intuitive and more formal way to address bounded rationality is prospect theory, particularly cumulative prospect theory.[106] This theory distinguishes two phases in decision making; first a phase of framing and editing which is then followed by an evaluation phase.[107] Its groundbreaking innovation is the shape of the utility function which is different for gains and losses, in order to represent loss aversion. This quintessence of prospect theory, i.e. the asymmetry of gains and losses can already be found with Adam Smith who states: "we suffer more, it has already been observed, when we fall from a better to a worse situation, than we ever enjoy when we rise from a worse to a better."[108] Accordingly, choices involving gains are risk averse and vice versa choices involving losses are usually risk seeking.[109] This is also the formal explanation for the typical customer behaviour where customers are more comfortable waiving a discount (perceived gain) than to accept additional fees (perceived loss).[110] The shape of standard utility function for prospect theory can be taken from Figure 4.1.

It shows that negative utility from losses increases steeper than the positive utility from gains. In an interactive setting loss aversion becomes apparent in the gift exchange game.[111] Here two players receive different gifts and are then entitled to trade the gifts. Accordingly, the possession provokes a loss aversion and impedes trade, as people demand higher prices for their gifts than they would demand without possessing the good in the first place.[112] This general attitude of overvaluing and securing one's belongings brings us back to Smith. With regard

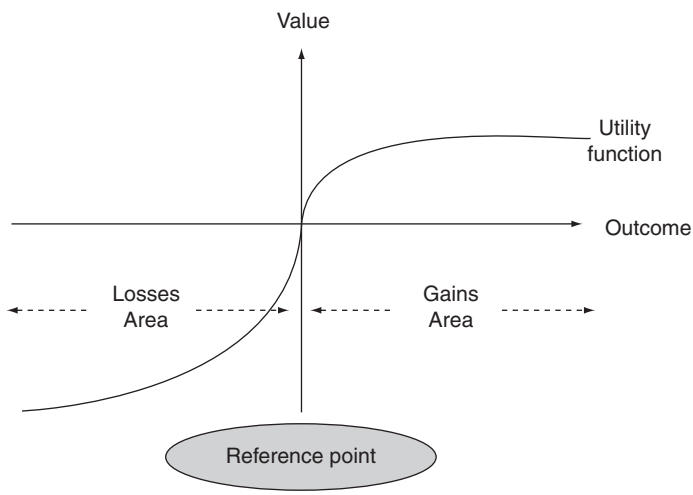

Figure 4.1 Utility function in prospect theory.

to rationality, he argues that security is the first principal of prudent behaviour.[113] Now with prospect theory there is a formal framework for this principle.

In conclusion, there is vast descriptive evidence on the departures of rationality which supports the new theories of bounded rationality. But in assessing the current state of very different approaches to theory formation in bounded rationality, it can at least for the moment be stated that "there is no unified theory of bounded rationality, and probably never will be."[114] Nevertheless, research in behavioural economics can approach a unifying conception of rationality drawing from economics, psychology and sociology.

4.3 Rationality conceptions in order ethics

So far, I have laid down a positive and experimentally founded conception of human rationality. This has shown that traditional ethics may have too strong demands regarding human knowledge and intelligence.[115] Consequently, the modern conceptions of rationality must be discussed in ethics and economics, which also means in order ethics. This does not only include bounded rationality as already outlined, but also implies an assessment of order ethics in terms of strategic rationality bearing in mind the game-theoretic orientation of order ethics.

4.3.1 The function of rationality for order ethics

A primary concern is the function of rationality in ethics and economics. Here three positions are commonly considered. First, the classical definition renders rationality and morality as incompatible.[116] Second, there might not be a contradiction of moral action and rational choice.[117] And finally, there is the position that the very function of morality is to prevent failures of rationality.[118] For order ethics the first position is overstated. If rationality and morality were contradictory, the theories of economic ethics and business ethics would be futile. For, as will be argued, every definition of economics or behavioural economics relies on some rationality notion. Nevertheless, the extent of rationality is strongly debated, i.e. whether instrumental rationality, bounded rationality or strategic rationality is the right representation of human reasoning, but the existence of some rationality is the foundation for any economic rationale. In analogy, the third view cannot be maintained for the scope of this book. If morality were a full supplement to rationality, theories of business ethics and order ethics would be superfluous. Therefore, the balanced view of morality and rationality being two interacting conceptions is taken in the following. Along these lines, Kant and Smith have stressed the importance of morality for rational choice.[119] On this basis, the general advantages, disadvantages and potential relations of rationality to order ethics need to be dwelled upon.

Order ethics is generally open towards any particular definition of rationality. In fact, Lütge has touched on the relationship of order ethics with bounded rationality.[120] However a full account of this relationship has so far not been

given. Thus the relation between order ethics and rationality seems to be underdetermined. On the one hand order ethics argues to be open towards various rationality definitions, but on the other hand a lot of its arguments are following standard economic lines of argument as neoclassical and instiutional economics. For example, the rationale of economic incentives as the governing force in the economy essentially relies on the full rationality conception shared with the neoclassic paradigm. Moreover, order ethics argues that elements of bounded rationality such as increasing altruism should not negatively affect the stability of economic rules. Following this argument, order ethics perceives bounded rationality as an appreciated, but not necessary reinforcement for rules.[121] Henceforth there are two directions from which to address the challenges of rationality to order ethics. First, the paradigm shift to bounded rationality and its implications must be discussed with regard to order ethics. And second, with its game-theoretic foundation order ethics inherits the game-theoretic rationality foundation. Accordingly, order ethics can also be assessed in terms of different rationality definitions taken from the game theory literature.

4.3.2 Bounded rationality as an extension for order ethics

Behavioural economics steps away from the traditional rationality conception and rather employs various theories of bounded rationality. Hence the relation between ethical theories and behavioural economics needs a closer assessment in terms of their rationality conceptions. Simon had originally waived a discussion of the normative implications of his theory of bounded rationality. He merely wanted to draw a clear positive picture to enhance economic theory.[122] As already outlined in this chapter, bounded rationality contradicts the idea of strict utility maximisation and questions the cognitive capacities of economic agents. Or as Simon puts it:

> we must give an account not only of substantive rationality – the extent to which appropriate courses of action are chosen – but also procedural rationality – the effectiveness, in light of human cognitive powers and limitations, of the procedures used to choose actions. As economics moves out toward situations of increasing cognitive complexity, it becomes increasingly concerned with the ability of actors to cope with the complexity, and hence with the procedural aspects of rationality.[123]

With reference to experimental evidence, it has been corroborated that bounded rationality captures actual human behaviour and its limitations more correctly than it is done with instrumental rationality in classical ethical theories or full rationality in economics.[124] Models of bounded rationality are characterised by a combination of exhibiting traditional rationality and also considering intuitive decision-making capabilities. Also for business ethics "moral rationality in economic contexts is strongly bounded."[125] Overall, it can be argued, that in economic decision-making contexts the role of intuition is far more important than

expected.[126] This view confirms taking a wider approach to rationality. For order ethics that does not necessarily mean that conclusions derived from game theory and full rationality are flawed, but they require a closer and more precise adjustment with theories of bounded rationality. Since order ethics, as every ethical theory, relies on some assumption of rationality, experimental economics can provide evidence to challenge and advance these assumptions.[127] Therefore some central concepts of bounded rationality, i.e. heuristics, limited self-control, loss aversion and framing effects are taken to illustrate their implications on order ethics.

First of all, heuristics as a central element of bounded rationality is not new to ethical theory, for Aristotelian phronesis can be interpreted as an ethical heuristics.[128] In most economic contexts with moral relevance the concept of bounded rationality goes back to some form of uncertainty.[129] Therefore heuristics is a useful means to manage this uncertainty, as it can help reduce the complexity of certain situations. Moreover, using heuristics in decision making comes down to dispensing with the idea of strict maximisation. As a consequence, contemporary theories from behavioural economics follow two approaches of constrained maximisation. First, it considers theories of aspiration adaptation, which understand decision-making behaviour as forming and adapting aspiration levels to express expectations.[130] And second, satisficing as another formal concept for non-maximising heuristics is accounted for.[131] Moreover, with regard to ethics, it can be argued that human beings might also only satisfice in their moral decision making.[132] Based on social contract theory the ethics of Gauthier has already taken up this idea of constrained maximisation.[133] Following the social contract tradition also integral to order ethics, heuristics naturally ties in with order ethics.

The second issue addressed with bounded rationality in ethics is the scope of self-control. This poses another anthropological question, concerning both ethics and economics. The problem becomes most evidently manifest in intertemporal choices.[134] In this regard, neoclassical economics makes no difference between preferences in different periods, as long as some discount rate is defined to adjust the respective utilities.[135] Put differently, this question of discounting and discount rates can be seen as an interesting "economic approach to ethics."[136] But from an ethical perspective it is very questionable whether later and current well-being can be compared that easily.[137] This becomes especially apparent, when making a case for inter-generational justice. So Brennan distinguishes between choice between points in time within an individual's lifespan and choices between generations.[138] Thus a limit of the whole idea of discounting, no matter if exponential or hyperbolic, lies in its inability to derive sound conclusions for decision tasks affecting future generations. A simple function cannot represent utilities when the relevant people change. As a consequence, this would have cut-off points in the underlying utility functions and render all economic models senseless for choices with a long time horizon. The problem worsens when it comes to economic design and policymaking. Order ethics as a theory of economic ethics localises the governing forces in the rules of the economic

framework. Thus it puts less weight on the individual power of self-control from the outset. Based on the idea that human beings in a globalised and anonymous setting are only strictly following incentives, they do not necessarily need to possess self-control. Hence order ethics may be interpreted as already having a restricted notion of rationality in that sense.

Third, loss aversion is a feature of bounded rationality with relevance to order ethics. There has always been the puzzle of different behaviour when sharing a surplus or a cost.[139] This asymmetry is also relevant to virtually all business decisions and can now be explained with regard to prospect theory. As cost and benefit are cognitively evaluated with some reference point and yield different risk attitudes, under common assumptions people value losses up to twice as important as profits. So winning €1 is not as satisfying as losing 1€ is dissatisfying. This asymmetry is often experimentally confirmed with the so-called "endowment effect".[140] In these experiments the subjects get an endowment as a gift, e.g. a cinema ticket worth €10 and then get the opportunity of selling it back. In consequence, the subjects demand prices significantly higher than €10, because they now have a higher reference point and need to compensate for a loss of €10 which is worth maybe €15 to €20 according to prospect theory with some standard parameters. Hence order ethics has to be careful in its assessment of gains and losses. Furthermore, it could devise a policy of always choosing a loss frame for ethically undesirable actions. This would increase decision makers' sensitivity to this option and decrease the likelihood of them being picked. Hence loss aversion is not explicitly accounted for in current order ethics, but nor does it contradict it. In fact, loss aversion can even be employed in favour of order ethics.

Finally, framing effects are another occurrence of bounded rationality, which affects both economics and ethics. With reference to behavioural economics, framing is particularly linked to the concept of loss aversion.[141] Also, when imposing time pressure on a decision maker, choices can change from ethical options to unethical options, depending on their framing.[142] The most important relation to order ethics can be illustrated with the fundamental prisoner's dilemma underlying this theory. Here one can see that framing can also change the perception and choices in principally rational games. So a neutral pay-off matrix (framing 1) or a personalised matrix (framing 2, framing 3) yield significantly different decisions.[143]

For the neutral framing, as depicted in Table 4.1, experimental behaviour usually shows cooperation rates of about 20 per cent. This is still noteworthy

Table 4.1 Prisoner's dilemma (framing 1)

		Player 2	
		Option A	*Option B*
Player 1	Option A	3; 3	0; 4
	Option B	4; 0	1; 1

when remembering that the game-theoretic Nash equilibrium predicts zero cooperation.[144] With the introduction of framing 2 and 3, the pay-offs and the underlying dilemma structure, are not affected; only the available information and its presentation are changed. Here, the focus is on one-shot encounters with the prisoner's dilemma to avoid reputational effects, which are another matter.

Framing 2, as shown in Table 4.2, confirms the standard experimental evidence finding a cooperation rate of 20 per cent for the one-shot game. Here a first explanation can be found in social preferences, especially inequality aversion, which favours the cooperative decision with a perceived fairer pay-off structure.

However, framing 3 enables cooperation rates of 80 per cent, which approaches the Pareto-efficient solution of unexceptional cooperation in this dilemma structure (see Table 4.3). This result has two immediate consequences for order ethics. First, it shows again that the prisoner's dilemma is a very special and fragile dilemma situation. Hence as argued in Chapter 3, more diverse games need to be discussed in order to capture the manifold aspects of economic interaction by means of game theory. Moreover, the stability of predictions made in order ethics is at risk, if framing is not adequately taken into account. This does not necessarily mean that framing imposes a problem to order ethics. On the contrary, framing could be integrated into order ethics for governing and improving decision making. So for example when making policy changes, order ethics needs to account for framing effects and can also use framing as a strategic component for institutional design.

Overall, it can be argued that increasing the awareness of bounded rationality can help to improve ethical decision making. And even more importantly, policymaking based on order ethics can capitalise on the various bounded rationality concepts to make markets more ethically robust. The discussion has proven that order ethics is open to the integration of various other rationality concepts. Most importantly, order ethics does not conflict with bounded rationality. In fact, it can utilise the new opportunities associated with bounded rationality such as loss aversion and framing.

Table 4.2 Prisoner's dilemma (framing 2)

	For me	*For him/her*
Option A	1	1
Option B	3	−3

Table 4.3 Prisoner's dilemma (framing 3)

	For me	*For him/her*
Option A	0	3
Option B	1	0

4.3.3 Collective and strategic rationality as an extension for order ethics

After having stressed the behavioural perspective resulting from bounded rationality and its implications on order ethics, I now move on to the game theoretic view on rationality definitions. From a philosophical point of view every conception of rationality constitutes a framework of rules.[145] Accordingly, the axioms of rationality can best be exposed by means of game theory, which helps us to realise its formal implications. For example, one can study the importance of updating common knowledge, since only small changes of information can affect the outcomes of rational choice. Also modern refinements of full neoclassical rationality such as collective rationality and strategic rationality can be discussed.

Experimental investigations of simple games regularly prove the irrationally of players in violation of standard game theory and its assumptions.[146] Nevertheless, game-theoretic models provide comprehensive means to analyse the rationality of decisions and the long-run equilibriums of outcomes. Thus strong conceptions of rationality can be discussed and analysed in complex contexts beyond standard prisoner dilemmas. Still, it remains questionable whether a purely rational framework such as game theory can provide us with behavioural explanations.[147] Nevertheless, considering refinements of the rationality definition can help to improve our understanding of game theory and human behaviour. Therefore, now, behavioural economics and especially experimental evidence on rational behaviour are considered as complementary. As already argued the assumption of neoclassical rationality must be questioned from a behavioural point of view.[148] Furthermore, it can be argued that both instrumental and bounded rationality fail to capture the social dimension of rational choice. For example, Binmore argues, that people often fail to maximise, because they first have to learn about the functioning of their social environment.[149] Hence social aspects such as interaction need to be an integral part of rationality. Accordingly, more sophisticated accounts of rationality in game theory can be used to advance our understanding of morality.[150] Therefore two alternative accounts of rationality which attune more to behavioural economics are also discussed. These are collective rationality and strategic rationality.

With *collective rationality*, one can argue that societies have shifted from a focus on the individual to a more social form of living. This comes along with the acceleration of globalisation bringing together and interrelating economies worldwide. In this regard, Gintis uses experimental evidence against game theory to devise an evolutionary argument. Accordingly, the strong conception of rationality employed by game theory has been the original nature of human beings in history. But with the dawn of civilisation it has become useful to optimise group utility rather than individual utility. Thus values such as fairness have evolved and are actually dominant in our current nature.[151] As a consequence, the aim of rationality is not individual but social optimisation. This is often more consistent with experimental evidence than the claims of standard

rationality. Arrow also pointed out that rationality "gathers not only its force, but also its very meaning from the social context, in which it is embedded."[152] Order ethics originally conceives rationality as individual rationality.[153] But it is at the same time understanding itself as a theory for the age of globalisation, a view which becomes especially prominent with Lütge.[154] Hence it is also prone to the integration of collective rationality.

Strategic rationality is constituted of conditional strategies, i.e. decisions are made contingent on other external events. This also includes the concept of conditional rationality, where rational actions are contingent on future decisions and others' present and future decisions.[155] So it offers an alternative to instrumental rationality, which also conforms to social norms.[156] Here "we expect people to conform to norms and expect others to expect us to conform, too. A social norm is, in a way, a cluster of expectations."[157] This notion might also be able to reconcile order ethics and game theory with behavioural economics. Since strategic rationality continues the formal notion of strategy from Chapter 2, it is evidently consistent with game theory.[158] More generally, strategic rationality is a special form of practical rationality and still integrates the concept of instrumental rationality. With regard to game theory one can make the essential distinction between rational strategies in the narrow sense and rationalisable strategies in the wider sense. The former are represented by equilibriums in a game and are based on standard rationality of individual self-interest and pay-off maximisation. The latter are a bigger set. So strategic rationality includes all strictly rational strategies and in addition allows for all non-dominated strategies. For the relation of ethics and economics, this means that rationality is pragmatically defined as acting consistently.[159] In the beauty contest game, as a classical example of experimentally investigating rational reasoning in behavioural economics, this would mean picking any potential equilibrium strategy.[160] For the game, this would be independent of the optimal strategy and of considerations about reasoning depth.[161] Moreover, strategic rationality can be used in social contract theory and thus on the subject of cooperation as discussed in the previous chapter. Coming back to Gauthier's theory of social contract he develops strategic rationality as a revisionist account of practical rationality. Therefore he introduces a distinction between parametric and strategic rationality.[162] On his account parametric rationality represents the individual perspective of neoclassical models, whereas strategic rationality is more attune to game theory and defines rationality in the context of human interactions. Here only strategic rationality is suitable for considering the moral and economic implications of interactions.[163] Strategic rationality can also be employed by order ethics and establish more strategies as rational. This ties in with the extensions already identified in Section 3.3.2.

In conclusion, the standard assumption of full rationality raises strong doubt regarding its adequacy from the empirical perspective of behavioural economics. However, bounded rationality, collective rationality and strategic rationality, as currently discussed, are all viable alternatives compatible with the open rationality conception of order ethics. Strategic rationality is only a weaker version of

full rationality, and thus it can very easily be incorporated in order ethics. For implementing this conception, only the game-theoretic foundation of order ethics must be sharpened and widened. Collective rationality has a different starting point, but it is particularly suitable for modern order ethics and the associated demands for an ethics of globalisation. Finally, bounded rationality is the descriptively richest depiction of actual human rationality. It can also be integrated with order ethics and yields additional opportunities regarding the embedment of rules. So extending order ethics with bounded rationality entails new strategic options regarding the formation of rules and incentives.

5 Fairness in economic ethics

> *Fairness is the right dealing between persons, who are cooperating or competing against one another, as when one speaks of fair games, fair competition and fair bargains.*
>
> (John Rawls)

Fairness is a central concept to any social interaction and especially so for economic interactions. Thus fairness must also be discussed with regard to economic ethics. Following the approach of this book, it is assessed with reference to behavioural economics. Therewith it benefits from the vivid research conducted on fairness by economists in the last decade. This chapter is structured along the distinction between outcomes and intentions, which gives us distributive and procedural fairness as the two main themes. First some main insights from the political philosophy literature on distributive justice are stated in Section 5.1. Then distributive fairness such as most importantly inequality aversion is covered in 5.2. Procedural fairness usually based on reciprocity is then taken up in 5.3. Finally in 5.4 the main implications of fairness research for order ethics are pointed out.

5.1 Distributive justice and social contract basing normative fairness

To take up the discussion, the basic principles of distributive justice as discussed in political philosophy are outlined. These are usually equality, need, merit and efficiency. As a contemporary approach a particular focus lies on Rawls's theory of justice based on the idea of social contracts.

5.1.1 Basic principles of distributive justice

Questions of distributive justice are at least as old as philosophy. They have been discussed by the ancient Greeks and remain a highly contentious topic in our times. Within contemporary philosophy the issue of distributive justice exceeds the boundaries of ethical theory. It is rather an extensive matter of practical

philosophy combining insights from ethics and political philosophy. However, in the literature there is a strong consensus on the four main principles of distributive justice being equity, need, merit and efficiency.[1] Some approaches advocate combinations of the four classes or a pluralism demanding to choose different principles for different dilemmas of justice. Therefore as a first step these categories are illustrated in the following.

The most naive and basic approach to distributive justice consists of *equal distributions*. It goes back to Plato and Aristotle.[2] However, it cannot answer the question of which aspects of an individual case are normatively relevant in terms of distribution.[3] A more sophisticated approach to justice is that of proportionality, which relates back to Aristotle.[4] It enables a more complex grasp of fairness, as it makes the distribution contingent on some other measure such as entitlement or claim. However, in practical situations it is often unclear and thus difficult to establish exact ratios for a distribution. Moreover, this conception relies on some measure to base the apportionment on. This is also one strong reason for it being impractical, as it is usually difficult to assess whether for example need or merit is a better criterion. However, *need* as an independent criterion has the intuitive appeal to justice, so that Locke argued that need imposes a limit on potential inequalities of distribution.[5] Thus this criterion is an attack on classical utilitarianism as it attenuates the importance of individual utility and self-interest, but stresses the social aspect of balancing interests in a society.[6] Therefore need is also very important to welfare economics.[7] Here, it is usually desirable to ensure a minimum distribution level for everyone.[8] The existence of a minimal welfare level could also be understood as utilitarianism with a floor constraint. According to Miller, *merit* can be deconstructed into ability, effort and performance.[9] Merit as a distributive principle is neglected by, for example, Rawls.[10] He argues that neither social advantages such as wealth and connection, nor natural advantages such as beauty, intelligence or even the desire for hard work can be the basis of inequalities in distribution. Similarly, other authors agree on the irrelevance of merit.[11] Nevertheless, from an empirical perspective merit is one key motivational forces in Western societies. After all, most organisations evaluate their members by virtue of merit, which becomes manifest in the economic tournament structure of typical career paths. *Efficiency* is the fourth principle of distributive justice typically found in the normative literature.[12] Efficiency is usually taken as an *ex post* justification for inequalities.[13] It is deeply grounded in economic thinking and relates to the Pareto-criterion as already introduced in Chapter 2. Rawls terms the important trade-off between equality and efficiency the "aggregative-distributive dichotomy".[14] This is also his starting point to claim the MaxMin criterion as the best compromise between fairness and efficiency. But whilst efficiency is a sufficient objective in economics, it cannot be the only aim for an ethical theory. Moreover, in doing so he assumes MaxMin preferences as a viable way for implementing fairness concerns. However, this fundamental assumption is not tenable considering the experimental evidence.

All four criteria cannot sufficiently answer the initial question what the normative "currency" of measuring and judging alternative distributions really is.

There is wide agreement that happiness as the *summum bonum* of ethics is the most basic measure for distributions, but as there is no strictly monotone relation between efforts, possessions and happiness, it remains difficult to determine happiness by means of observables. Moreover, happiness most likely does not only relate to objects, but also to additional qualities of life such as health and social ties. As the question what qualities have to be distributed on the basis of normative theories cannot be discussed here, I focus on the distribution of goods as the main dimension of economics and business ethics. However, another issue raised by distributive justice is whether the initial distribution of resources and talents is central for every further redistribution.[15] This question decides how one evaluates a person with natural talents or resources compared to a person without these talents and resources, but with the same needs, merits and efforts. Here again the scope of this book is too restricted for a full discussion and thus I focus on the evaluation of current distributions, abstracting from initial distribution effects. A final potential objection against theories of distributive justice is to refute the practicability of general frameworks of justice and advocate concepts of local justice instead. On such accounts different norms based on different social behaviours are adequate for different contexts.[16] This leads to pluralistic accounts of justice, which also have some popular proponents.[17] For example, low-income groups typically prefer distributive norms of equality, whereas high-income groups prefer norms of merit and deserts.[18] Overall, economic experiments vary in their interpretation of which basic principles of distributive justice are the basis for contribution and distribution in public good games. Some authors find efficiency as the main motive for assessing distributions.[19] Others focus on deserts principles.[20] With regard to deserts-based criteria of distributive justice, empirical evidence suggests that differences in effort are the main justification for inequalities of distribution.[21] Pluralism is thus necessary to capture justice in all economic situations as already argued by Walzer.[22] For example, labour markets might best rely on a deserts-based criterion. But the distribution of public goods might best follow an equity approach. However, the question of local and global justice also directly yields some problems with regard to national and international justice.[23] As a theory for globalising economies, order ethics must dispense with local justice accounts and deal with the issues of justice on a global, general level.

5.1.2 A theory of justice and the social contract

Today, the notion of distributive justice focuses on the problem of resource allocation.[24] Thus the notion of justice has shifted from an individual to a social issue. The most important impetus to the contemporary discussion of distributive justice was undeniably given by John Rawls's work *A Theory of Justice* and his related writings.[25] Therefore every discussion of distributions in economic ethics has to deal with his influential account. Thus this section gives a short introduction into Rawls's contractualist theory and exposes the critical issues.

First of all, Rawls has realised the important distinction between justice for institutions and justice for individuals, which have to be dealt with separately. He claims justice is "the first virtue of social institutions",[26] which makes it central to his understanding of the social contract. Even though order ethics is different from the conceptions of Rawls, both are based on contractarian grounds. And as order ethics is explicitly aiming at the institutional level, its relation to the basic theory of justice needs to be discussed as a first step. Rawls's work is conceptualised on the basis of an initial decision under the "veil of ignorance". Thus he employs self-interest in his conception of a veil of ignorance to generate justice. As the principles of justice are agreed upon under complete uncertainty, there is no reason not to equate self-interest with common fairness. In particular he derives two universal principles, i.e. "the liberty principle" and "the difference principle". With the liberty principle he tries to establish as many basic liberties as possible for every member of a society. The difference principle formalises the decision process of his normative theory of justice.[27] It constitutes that unavoidable economic inequalities must be governed, such that they offer the greatest benefits to the least advantaged members of society. Overall, he tries to provide an alternative to utilitarianism and also to overcome the criterion of Pareto-efficiency. Nevertheless, his theory can justify some inequalities, because it would be unfair to make people pay for injustice they have not actively caused.[28] This understanding follows a sense of procedural justice, which is discussed in more detail in Section 5.3. The decision process Rawls depicts is characterised by risk-aversion as a consequence of the high degree of uncertainty. His difference principle follows the ideas of prioritising benefits for the worst-off member of society. Thus it leads to choices based on the MaxMin principle.

One general problem of the MaxMin principle from a behavioural point of view is that it assumes the individuals choosing on justice to be overly pessimistic.[29] The first experimental approach to analyse human decision making in terms of MaxMin was conducted by Frohlich and Oppenheimer. As it turns out, they found no support for Rawls's conception of MaxMin distributions as a behavioural reality in their studies.[30] In their setting people have to decide about four different principles for just distributions. There they find that with an international subject pool roughly 75 per cent prefer to have a floor constraint for the worst distribution and only 5 per cent choose in strict accordance with the difference principle.[31] This nicely mirrors the actual governance one finds in welfare state systems, where a minimum level of material well-being is secured for everyone, but these economies do not work in accordance to MaxMin. Furthermore, with reference to behavioural economics it can also be shown that MaxMin neither captures common beliefs about justice nor current game-theoretic models of distribution.[32] Hence this criterion is no longer sufficient to solve questions of distributive justice. According to Rawls, a principle of fairness in general is based on a "beneficial and just scheme of cooperation", a "certain restriction of liberty" and provided that the "benefits produced by cooperation are free".[33] Under these conditions any cooperating person has to

respect a duty of fair play. Coming from this idea about moral decision making, Rawls adapts the equilibrium idea of economics and game theory and introduces what he calls the "reflective equilibrium". Whilst the economic equilibrium concept identifies states of distributions which are stable in the long run, the reflective equilibrium focuses on the procedural component of equilibrium formation, i.e. gradually adapting a distribution until everyone is satisfied. For order ethics this means that slight adaptations are beneficial in an economic system, provided that the rules and relevant environment remain constant. So the equilibrium conception is still consistent with full rationality and its behavioural implications such as adaptation and satisficing are consistent with experimental evidence. For Rawls, a subject's conception of fairness also varies with the degree of individual power. In particular, more power or initial resources increase their claims.[34] This is an accurate observation of human nature, which one should bear in mind for the following investigations. A serious problem with the distribution reached in Rawls's original position is its conception as a binding contract.[35] Theoretically deriving the distribution is one thing, but establishing an authoritative long-term agreement requires some more scrutiny and argumentation. In this regard game theory, i.e. the literature on cheap talk games and signalling, could help to advance his theory.

Despite the criticism, there is still extensive work on especially Rawls's theory from the point of game theory. For example, Laden has criticised the theory and proposed a new more game-theoretic solution to the problem of distribution, which he bases on the concept of least cores.[36] More importantly, the conception of Rawls's theory was an inspiration for additional subsequent works. So both Nozick and Gauthier base their theories on some assumptions of the original position.[37] However, from a game-theoretic perspective Binmore criticises that they do not solve the question of distributive justice but just shift it to a more technical layer.[38] Another current account of justice is adumbrated by Walzer with his theory of "complex equality".[39] He posits different moral standards for different moral issues. For example, he considers education, whereby education for citizenship and education of social competence clearly require different distributive principles.[40] Hence a complex notion of equality accommodates different standards and facilitates different approaches. Therefore different goods are justly distributed by different rules. The main problem of this theory is assuming that adding up local accounts of justice leads to a global system of justice. This claim has not been justified or proven, yet, but neither has it been defeated. Finally, Rawls's liberalism was also the inspiration to the theory of libertarian paternalism, which already combines elements from political philosophy and behavioural economics.[41] This theory, most prominently advocated by Thaler and Sunstein, respects the liberty principle as established by Rawls. But also it agrees on using some additional principle to govern a liberal society. In their case this does not focus on distributive justice, but rather on sound economic decision making. Hence they endorse active decision manipulation to support citizens. In conclusion, Rawls's theory is based on the idea of social contracts and takes up concepts from neoclassical

economics. However, experimental evidence severely impairs his theory, but not necessarily its general conception. This is also reflected in the fact that most alternative theories have not yet found the same acceptance as Rawls's theory of justice.

Altogether, taking up behavioural economics and game theory to formalise and analyse the subject matter once again becomes recommendable. Therefore the discussion needs to address the different ethical focus on actions and their consequences with regard to theories of economic ethics and social preferences. Here the guiding question will be the interplay of social preferences in economic models and social norms in ethical theory.[42] Thereby I take up the normative theories of distributive justice and procedural justice and relate them to the economic literature on outcome fairness and procedural fairness. Matching normative theories of justice with empirical evidence is necessary to test theories and adjust them to realistic conditions. And fortunately, behavioural economics can provide us with the required evidence.

5.2 A behavioural perspective on economic outcome fairness

In the following section the relation of distributive justice to modern models of economic fairness is presented. This highlights the relevance of economically founded fairness for order ethics. Moreover, experimental evidence is given which illustrates the theoretic boundaries of traditional Nash equilibrium solutions. Finally, behavioural economic models of fairness based on inequity aversion rather than strict self-interest are introduced.

5.2.1 Relating distributive justice to economic fairness

Similar to philosophy, justice is a topic which has also occupied economics since the inception of the discipline.[43] However, in the field there is some criticism that there are still two separate strands in the literature; one in political philosophy dealing with normative distributive justice, and one in the empirical sciences such as economics capturing the de facto attitudes about justice.[44] Unfortunately, economists, psychologists, sociologists and philosophers have yet come to little agreement on the subject matter.[45]

Neoclassical economics has failed in recognising the importance and dimension of the normative implications of distribution. It takes all sufficiently efficient distributions to be also socially optimal and fair.[46] But sole welfare maximisation is an insufficient account of distributive justice.[47] Similarly the most important recent works in philosophy completely neglect the empirical advances. Thus they miss out on the opportunity of incorporating positivist experimental data in their theories which would be a fruitful ground for formulating normative theories more in line with actual human behaviour. Hence this section presents the empirical underpinning for advancing economic ethics. Again, the experimental evidence has to be discussed in the light of game theory, as the foundation of experimental economics. Following the research

methodology of this book one needs to draw attention to the empirical matters. This ultimately means employing behavioural economics for a more holistic approach to distributive justice and fairness. Here it is argued that traditional philosophical theories must be reassessed and this reassessment needs a behavioural and experimental perspective.[48]

In the following, I am going to define theories of *fairness* as the economic counterpart to normative theories of *distributive justice*.[49] As already presented, the basics of economic fairness have been inspired by the works of Rawls on distributive justice.[50] Originally, he conceived fairness only as the existence of envy-free and Pareto-optimal states, which is still much in line with the neoclassical tradition.[51] But in behavioural economics, this field constitutes an interdisciplinary topic also drawing from psychology, sociology and politics. Moreover, in the course of time, the question of distributive justice has moved from a purely philosophical concern to an issue with strong practical relevance.[52] Central economic topics which find their theoretical foundations in distributive justice, are changes of tax systems, payment of top executives and general shareholder value orientation. The absence of fairness in economic theories has long shown the discrepancy between economic models and lay intuitions with regard to human behaviour.[53] So people perceive increases in price due to increases in cost as fair, but they condemn increases in price based on the exploitation of some environmental changes as unfair.[54] For example, in experiments increasing the price for snow shovels by 25 per cent due to increased costs for materials is perceived as fair. But the same increase of 25 per cent motivated by a blizzard and resulting in sudden increases in demand is perceived as unfair. This example also shows how important the framing of decisions can be for their acceptance, as already remarked in Chapter 4. Incorporating fairness as a central variable for human decision making has only become popular with the rise of behavioural economics and models of social preferences.[55] Essentially, social preferences are based on principles of distribution. Currently neoclassical self-interest, inequality aversion and reciprocity are the most popular conceptions for such a principle.[56] Sometimes altruism is also discussed as a motivation for some economic activities. However, it is still difficult to explain most economic behaviour with pure altruism and thus it is excluded from further investigation.[57] As neoclassical self-interest has already been shown to be flawed from an empirical perspective, this leaves inequality aversion and reciprocity. Therefore, the remainder of Section 5.2 focuses on inequality aversion models as the primary approach to social preferences in economics. Analogously, Section 5.3 emphasises reciprocity as the basis for a procedural approach to fairness.

5.2.2 Integrating fairness with game theory

The original idea of updating the assumptions of neoclassical economics with behavioural insights on perceived fairness has started with a modification of the equilibrium concept in game theory, since the standard predictions of game theory are often unsatisfactory. For example, the fully rational strategy in the

ultimatum game would suggest a very uneven distribution which is empirically rejected with a high probability. Thus bargaining theory as a subdivision of game theory goes into the details of how people rely on intrinsic fairness and how they use fairness as a strategic device.

In particular, "bargaining theory studies the division of utility between or among agents."[58] Consequently, bargaining theory as a special field of game theory is widely assumed to be a suitable framework for analysing issues of distributive justice and also economic fairness.[59] The idea of utilising game theory for the assessment of distributive justice theories is not new. Early attempts can be found in the works of Harsanyi, Howe and Roemer, and Binmore.[60] To avoid arguments against the narrow and norm-free conception of utility, Harsanyi has tried to establish utility functions which include ethical preferences.[61] Later, Binmore's project, especially, culminated in a theory of justice based on the social contract idea and using game-theory as the formal foundation.[62] Subsequently, Rabin's very influential theory integrating an element of fairness into the solution concept of game theory was presented.

Rabin was the first to formalise the idea that other players are pay-off relevant and have to be incorporated in the individual's utility function.[63] Thus the standard pay-offs are changed and the new pay-offs yield different equilibrium predictions, which still follow the basic rationale of Nash equilibriums, but which are now called "fairness equilibriums". So to speak, fairness equilibrium is an extension of the Nash equilibrium concept. It is specifically designed to obtain Pareto-efficient outcomes in social dilemma situations and thus remedy the shortcomings or underdetermination of the Nash equilibrium. Rabin only needs the following three assumptions to arrive at suitable utility functions:[64]

i people are willing to sacrifice some of their own well-being to help others that are kind
ii people are willing to sacrifice some of their own well-being to punish others that are unkind
iii both (i) and (ii) will increase their effect on actions, as the sacrifices of well-being diminish.

Assumption (iii) is still following basic economics, i.e. the law of diminishing marginal utility. Assumptions (i) and (ii) are less intuitive and thus critical for the success of Rabin's theory. However, there exists experimental evidence for both assumptions where people show some altruism or engage in costly punishment. Therefore the concept of fairness equilibriums is assessed in some more detail. To illustrate this idea, take the classical prisoner's dilemma as an example. Here mutual defection is the only Nash equilibrium and thus the only stable and rationalisable strategy. This game changes if players mutually care for each other's benefits and pay-offs and if this caring is common knowledge. Then Rabin's model converts the utilities following the function:

$$s_i \in \arg\max_{s \in S_i} U_i(s, x_i, x_j)$$

In addition to the two players' preferences, the strategy is here part of the equation to determine the equilibrium. Taking some numbers, the prisoner's dilemma would now result in the pay-off structure of Table 5.1.

Here mutual cooperation is the fairness equilibrium realising the Pareto-superior outcome in the prisoner's dilemma.[65] But even though this can help to overcome some dilemma structures, the concept of fairness equilibrium is still discussed in the literature and cannot be taken as a general solution for all games.[66] Nevertheless, the original idea of fairness equilibriums was taken further by Engelmann and Strobel, who developed a game-theoretic model which is based on a general human preference for efficiency.[67] Rabin's contribution is important in two regards. First, he points out the importance of fairness in economic interactions and second, he recognises that in order to capture fairness he needs to establish new equilibriums. However, in establishing such an equilibrium concept he fails, as his modification of the core concept only changes behaviour in a non-forceful manner, i.e. in contrast to the Nash equilibrium his solutions are not self-enforcing. His fairness equilibrium degenerates to a normative appeal of playing a certain equilibrium, but it does not require a rational agent to do so. By now, new models of economic fairness based on social preferences have emerged, which find a rationale for behaving "strategically fair". These models are explicated in the following section.

5.2.3 Social preferences and inequality aversion

After having discussed the shift from rationality to bounded rationality in behavioural economics within Chapter 4, I now elaborate on the more recent shift from strict self-interest to social preferences. For a long time Adam Smith's models of economic choice have rested on the assumption of strict self-interest. This assumption of self-interest can also be phrased as "individual greed".[68] However, this conception is now increasingly superseded by social preferences such as: fairness, altruism, inequality aversion, kindness … These mechanisms of distribution are often compared, positing an antinomy of fairness and economic self-interest.[69] However, this is not the current state of the art, as economists increasingly find a complementarity between self-interest and fairness. Therefore a consideration of these theories is necessary to develop an economically sound conception of fairness. This helps to clarify the scope of order ethics, which is necessary to align it with the new paradigm of behavioural economics. Besides, many moral norms are also social norms.[70] Hence one can define social

Table 5.1 Prisoner's dilemma with fairness equilibrium

		Player 2	
		Cooperate	*Defect*
Player 1	Cooperate	0,4; 0,4*	0; 0,6
	Defect	0,6; 0	0,1; 0,1

norms as behavioural regularities, which stem from some communal belief about morality. Moreover, they are often supported by informal social sanctions.[71] In this regard Kahneman did not only develop models of choice under the assumption of bounded rationality, he was also amongst the first to prepare the ground for explaining economic behaviour with regard to fairness as a variable of social preferences.[72] Preferences in the economic sense are a very universal concept, as already mentioned in Chapter 2. Consequently, both self-interest and social preferences do not conflict with the neoclassic economic rationale.[73] Gintis also recognises two distinct features about the behaviour of economic agents with regard to distributions.[74] First of all, they are not only self-regarding but also care about other players' pay-offs. The resulting theories of fairness based on outcomes in behavioural economics can be divided into theories of inequality aversion,[75] MaxMin preferences[76] and altruism.[77] And second, they are not only concerned with outcomes but also take the intentions of others into account for moral judgements, which become particularly evident when considering the conception of reciprocity.[78] Anyway, both lines represent social norms which are usually argued to be deeply entrenched in human nature. Evidently, humankind has a longstanding tradition of learning and obeying norms.[79] Generally speaking, Fehr and Fischbacher emphasise that "economists fail to understand fundamental economic questions when they disregard social preferences."[80] In this chapter the analogous claim that ethics must incorporate the concept of social preferences is elaborated. As a crucial difference from the next chapter, it needs to be pointed out that justice is here treated as a unique principle, whereas in Chapter 6 it is considered as a function of virtue.

As already presented in Section 5.1.1 the four basic principles of distributive justice are equity, need, merit and efficiency. Nowadays, consensus has emerged on the fact that all four distributive criteria taken from philosophy do play a role in economic fairness, thereby the individual principles show a complex interplay.[81] Moreover, the discussion of economic fairness also involves consideration of altruism, reciprocity, spite, kinship and friendship.[82] In this context, social norms and emotions such as empathy, shame or guilt are of central importance. So human beings are the only species which evidently shows high rates of cooperation with non-kin.[83] In the complex social interactions our economic activity requires, the benefits derived from cooperation are much more diverse than in the animal kingdom. The additional complexities of social preferences in economic fairness are now discussed on the basis of behavioural economics. First of all, models of social preferences need to be embedded in the previous considerations and related to ethical theory. In this regard, there are two key features. On the one hand there is the idea of equality, or more specifically inequity aversion as a normative and anthropological principle, and on the other hand the idea of social norms as a construct also found in social contract theory. The centrality of equality, i.e. a 50:50 split, can be explained with regard to game theory, i.e. Nash bargaining games.[84] Bargaining games can also be used to construct evolutionary explanations for distributive justice.[85] For social contract theory the conception of fairness is based on the shift from a veil of uncertainty to the veil

of ignorance.[86] Only this move forces the individual into an impartial perspective. The whole social contract discussion highly depends on the naturalistic underpinning of the respective theory. There are two opposing lines of argument in this regard. The first one proposed by Binmore is called natural justice and based on game theory and the assumptions of self-interest as formulated in neoclassical economics.[87] It relies on the interpretation of game theory as a model for the social contract, in which the fair distribution in a society is agreed upon.[88] The second line presented by Gintis is also based on game theory but postulates a different notion of naturalism based on findings from behavioural economics.[89] This incorporates concepts such as human fallibility, social preferences and reciprocity. This approach is wider as it encompasses a unification of all behavioural sciences, which consists of ethics and economics amongst others. Adhering to the central concepts of Gintis, human fallibility is an empirical fact, which is probably best discussed with conceptions of bounded rationality, as already done in Chapter 4. Reciprocity leads to the procedural dimension of fairness, which is taken up in Section 5.3. The remaining notion of social preferences is examined in the following.

Models of social preferences based on inequality aversion

A first prima facie relation of economic fairness to economic ethics leads to the most basic distributive principle of equality. Behavioural economics takes up the idea of equity and bases several models of inequity aversion on it. These models all assume that people have a socially motivated propensity to avoid very uneven distributions.[90] This assumption is backed by vast experimental evidence, for example from ultimatum and dictator games, indicating that people do not always act according to the self-interested equilibrium predictions of standard game theory. In the ultimatum game, the evidence also suggests that people punish others for being selfish by rejecting low offers which only strengthens the moral impact of inequity aversion. In the dictator game, people do not behave selfishly, even given that this would maximise their personal monetary pay-off. So as a matter of fact, inequalities in wealth are an issue economic ethics must address and which economic theory can explain. Coming from economics many inequalities in wealth only arise from the different preferences people have in regard to buying and saving respectively.[91] Therefore it can be stated that not all inequalities are economically unfair.[92] After all, our moral intuition would undoubtedly judge a situation where a person A owns a house and a person B has spent a lot of money on cars, journeys and entertainment as fair, if both have spent the same overall amount of money. Such a situation only reflects different decisions of individuals in the course of years and is not morally accessible. The two currently most important theories of economic fairness are based on a notion of equity, reciprocity and competition.[93] Or they are based on fairness, competition and cooperation.[94] In providing complex accounts of fairness these models discard individual, solitary preferences as in the classical Homo oeconomicus paradigm. Concerning economic theory all behavioural variables such as social

concerns, fairness, altruism and morality are compiled in an agent's utility function. This is originally based on individual preferences and here extended to social preferences. Formalising the idea with a simple utility function results in the following expression:

$$U_i = U_i(x_i, x_j)$$

Here i and j represent two economic agents with the preferences x_i and x_j resulting in the utility U_i for the first agent. The resulting social norms can be interpreted as a special form of economic equilibrium.[95] In contrast to Bolton and Ockenfels, the Fehr–Schmidt model can represent that people have different reference proportionalities of what they perceive as fair. This means their model does not focus on the strict egalitarian reference point of 50:50 distributions. So they allow the agents to have different absolute preference for others.

Furthermore, even the compatibility of genuine altruism and economics has been put forward.[96] Formalising altruism in the economic utility function would mean making the utility dependent on only another player's outcome:

$$U_i = U_i(x_j)$$

Resulting from the different ways of modelling preferences, a critical distinction needs to be made between social preferences and conditional preferences.[97] According to this view, conditional preferences are a special case of social preferences, for "assuming conditional preferences for following a fairness norm is different from assuming a fairness preference."[98] Social norms can also be explained as mere rule-following, without any deliberate actions such as calculating reputational effects.[99] This proposition already marks the importance of game theory for economic models of fairness, as human agents are believed to use some strategic concept of fairness. In economic settings the agents form beliefs about others and adjust their behaviour of norm obedience to these expectations.[100] After all, it is very different if a person acts genuinely fair because of a preference or only conditionally fair because of some expected strategic reward for such an action. This is not blind altruism, but conditioning one's action on the other player's behaviour, as already discussed with regard to conditional cooperation in Chapter 3. For the basic utility function this means changing the perpetual consideration of social preferences to a strategic consideration based on some expectation of the other's behaviour.

$$U_i = U_i(x_i \mid x_j)$$

As a final remark on preferences it should be pointed out that even non-pay-off relevant information determines economic behaviour. Although economics classically assumes only monetary pay-offs to be relevant, the concept of preferences can accommodate much richer elements of human motivation.

Experimental evidence on bargaining: ultimatum and dictator game

As already argued experimental methodology is the most important means to further analyse theories of justice and gather data about fairness. So to illustrate the issue of economic fairness and how it relates to game theory, in the following the three most important games for the investigation of distributions are discussed, i.e. the Nash bargaining game, the ultimatum game and the dictator game. Social norms and most notably fairness are the most frequent explanation in economics for the behaviour observed in these games. First of all, in the *Nash bargaining game* two players have to bargain about the distribution of a monetary endowment. For example, they are given €10 and have to simultaneously declare how much of the money they claim. If the sum of the claims does not exceed €10, everyone gets his share of the money. If the claim is exceeded, neither player gets anything. Experiments of this game typically show close to 50:50 distributions, which also correspond with the game's Nash equilibrium.[101] Hence for this game the propensity to equity is in accordance with neoclassical rationality, and needs not resort to moral motives or social preferences.

The most important and still discussed representation of bilateral bargaining in behavioural economics is the *ultimatum game*. As an experiment it matches the decisions of two persons, which are allocated to the role of the proposer P and the receiver R. P can then divide an amount of *n*€ between himself and R. In response, R can choose whether he accepts the offer for both players or rejects. Thus, this game is an exceptionally mighty tool for modelling social interactions, as it can accommodate altruism (proposer offering 100 per cent) as well as punishment (responder refusing offers > 50 per cent).[102] The formal structure of the ultimatum game is depicted in Figure 5.1.

With regard to this game the responses strongly depend on the proposer's set of options, i.e. whether he has a continuous interval of responses or just a few discrete and externally imposed choices. So provided that the choices are discrete, e.g. offering 10, 20, 25 or 50 per cent, inequitable offers, lower than 50 per cent, are very often accepted.[103] This also relates to framing effects as already discussed in the previous chapter. A set of the choices 20, 45, 50 or 55 per cent

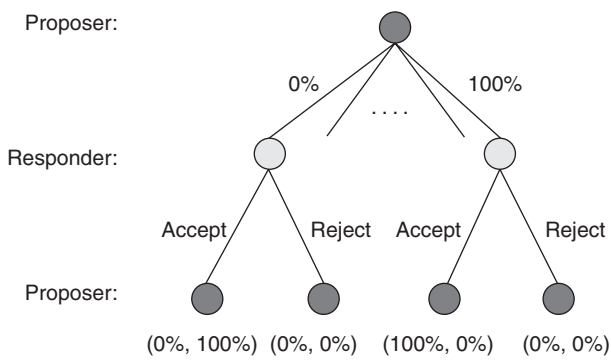

Figure 5.1 Ultimatum game in extensive form.

would provide a different framing to the responder and make him almost certainly reject the extremely low 20 per cent offer. Having a continuous interval of response alternatives gives a more realistic game structure with little room for external effects or outside justifications. Hence such a neutral framing is the standard practice for the ultimatum game in the literature. Here inequitable offers result in higher rejection rates, compared to the game with predefined distributions.[104] Overall, in this game there is a great deviation between game theoretic prediction and experimental evidence which clearly indicates a natural concern for fairness on both sides of the bargain.[105] One claim critics of behavioural economics often make is trying to reconcile the experimental evidence from ultimatum games with neoclassical models using the player's risk aversion.[106] Admittedly, this approach can explain offers being under 100 per cent. But that is still not an explanation for the high rejection rates on the receiver side. In this game the receiver has a decision with full certainty and thus no reason for responding with a risk attitude. Hence his rejections must be interpreted as some sort of retaliation based on inequity aversion, as he also makes himself worse off. Similarly the proposer in the dictator game is not facing strategic uncertainty and thus risk attitude cannot explain why he does not claim 100 per cent for himself. The experimental evidence from ultimatum games covers a broad literature. It makes a strong first case for reciprocal strategic behaviour and impedes any denial of such a natural human character trait as its existence can be replicated in many cultures.[107] This leads to the distinction between universalistic and contextualistic theories of justice in the ethical literature.[108] The first category aspires to general principles of justice, whereas the latter stresses that different situations may require different views on justice. Here behavioural economics provides mixed evidence. Of course it is nearly impossible to find experimental universality in the pure theoretic sense of ethics. However, taking the ultimatum game as the main example, there is an extensive literature on the cultural validity of the social preferences found there. The main finding is that social preferences apply in most cultures.[109] So excepting some quantitative difference, the main qualitative predictions of social preference models hold for countries such as Germany, France, UK, USA, Tanzania, Papua New-Guinea, Honduras, Indonesia, Ecuador or Israel. Here the pattern is always the same showing offers between 25 per cent and 50 per cent of the pie size and on the receiver side offers between 0 per cent and 30 per cent are rejected. Hence only to some extent "fairness norms are rather local and context dependent."[110] But taking the overall similarities in the data as a basis one can assume a basic universality of social preferences. Finally, the ultimatum game is the perfect means for analysing social preferences in the context of cooperation, since its simple structure excludes bounded rationality as the main explanation. The myriad ultimatum experiments have also strongly established the violation of decisions in accordance with standard game theory. Another interesting finding of competition is a variant of the classical ultimatum game. Here, there is not only one proposer making an ultimatum offer, but multiple proposers with offers p_i, competing for one responder to accept their offer. In this variation of the game

the subgame-perfect equilibrium prediction is that proposals converge to the maximum possible amount. This is also in accordance with the experimental evidence.[111] Moreover, it stresses the point already argued with collective rationality, that the size of a decision group significantly affects the dominating behavioural forces. So in two- or three-person ultimatum games, fairness is still driving behaviour, but by increasing the number of players participating in the bargain fairness is replaced with neoclassical self-interest.[112] As a typical example for this phenomenon consider winners of the national lottery. Based on social comparison and inequity aversion they share their new prosperity with family and friends and maybe also, but to a lesser extent, with some acquaintances. But most importantly, they usually do not feel any inequity aversion towards their whole social group or society. Hence inequity aversion is a kind of fairness, which is most powerful in small groups.

Another game to experimentally study the fairness of distributions is the *dictator game*.[113] It can be interpreted as an elementary version of the ultimatum game which even stresses the asymmetry of bargaining power. So in the game the responder must accept any distribution without any right to veto. Its basic structure is outlined in the extensive normal form of Figure 5.2.

Overall, this game is the ultimate stress test to theories of fairness, as there is no economic rationale for contributing anything to the responder. The possibly strategic decision-making element from the ultimatum game where the proposer is still reliant on approval, is not in place for this game. Thus the experimental results still indicating significant contributions corroborate the existence of a basic human propensity to fairness at least as inequality aversion. So dictators still give 30 per cent of the money to their partner in the game.[114] This is again a violation of the standard prediction of keeping all the money and not caring about fairness. Moreover, anonymity plays a central role, so subjects in dictator experiments behave less egoistically when their behaviour is observed by the experimenter or when they see a picture of their matched recipient.[115] This behaviour empirically substantiates some developments in the ethics literature. For example, Gauthier relies on people's ability to detect whether others are lying or telling the truth.[116]

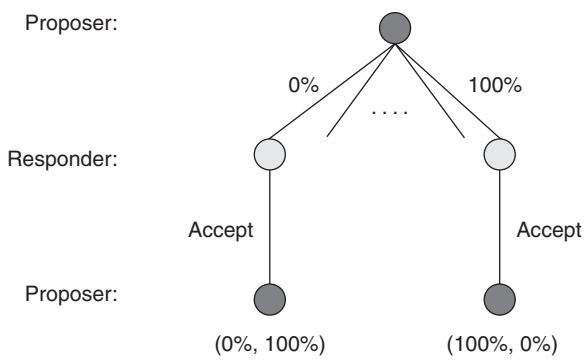

Figure 5.2 Dictator game in extensive form.

Summing up the discussion of bargaining games, consider the comparison of decision behaviour in the ultimatum and the dictator game in Figure 5.3.[117] The data shows that the proposer uses the additional power in the dictator game to make more self-interested offers. But considering that there is no chance for him to be punished, it is remarkable that there are still 80 per cent positive contributions to the opponent in this game, instead of just taking all the available money for oneself. So even though contributions in the dictator game are significantly lower than in the ultimatum game, they are still very different from the behaviour predicted by standard economic theory. Hence the importance and predictive power of social preference models is supported by this comparison.

5.2.4 Conclusions

In conclusion, there is consensus in behavioural economics that distributive justice, social preferences and only some self-interest are the foundation for human decisions in an economic context.[118] Moreover, the discussion about fairness has challenged the assumptions of neoclassical economics and postulated fairness as a necessary constraint on profit seeking.[119] Thus the current account of fairness also respects the value of justice and moreover resembles the conception of mutual benefit, as argued by Smith.[120] And according to Buchanan: "the mutuality of advantage from voluntary exchange is, of course, the most fundamental of all the understandings in economics."[121] Of course, a similar conjecture can be made from the point of order ethics.[122] Overall, the evidence from experimental economics defeats the account of strictly self-interested human agency. However, enriching the individuals' utility functions with social preferences can at least maintain the neoclassical full rationality assumption.

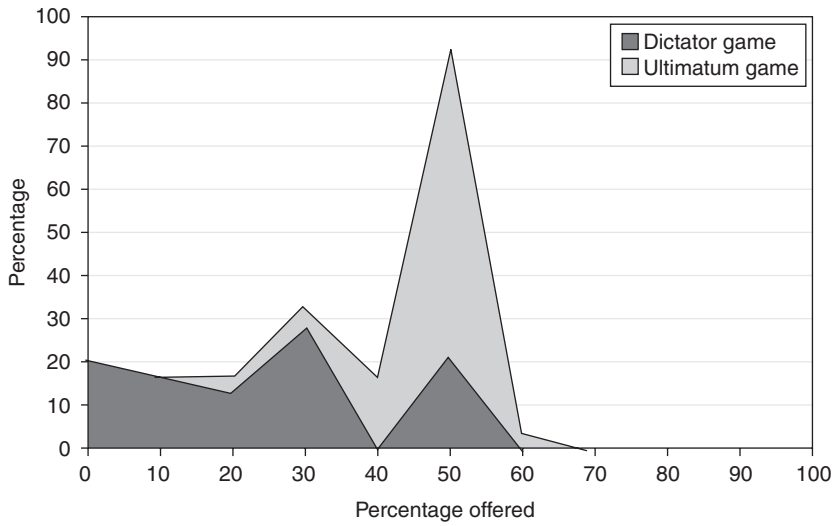

Figure 5.3 Comparing offered shares in ultimatum and dictator game.

5.3 A behavioural perspective on procedural fairness

After having discussed how outcomes are evaluated on the basis of behavioural evidence, I can now proceed with the procedural aspects of decision making. This stresses the relevance of intentions, when humans mutually evaluate their decisions, whereas traditional economics and even welfare economics has only assessed actions in terms of their consequences. First, an overview on procedural fairness criteria is given. Then reciprocity is discussed as the central behavioural mechanism for the design of fair procedures.

5.3.1 Fairness criteria and allocation procedures

Even though procedural fairness is shaping human decisions as much as distributive justice, it has long been disregarded. For Aristotle procedural justice was fully covered by a state's laws.[123] Accordingly, early Greek philosophy did not realise the normative dimension of procedural fairness and this mistake was later repeated in economic theory as well. Along these lines, behavioural economics gives a comprehensive criticism of neglected procedural aspects.[124] However, the first systematic investigations of procedural fairness can be found in the psychology literature.[125] It goes back to the work of Knaster.[126] The basic idea of procedural fairness can be captured as: "if a number of persons engage in a series of fair bets, the distribution of cash after the last bet is fair, or at least not unfair, whatever this distribution is."[127] This definition is based on an implicit notion of social contracts. However, in criticism against Rawls, Nozick has even stressed the importance of procedural aspects of justice contrasted with distributive aspects.[128] One can say his whole theory is entirely procedural, as it evaluates the distributive justice solely on the path leading to it.[129] Now, the distinction between procedural and distributive justice has also been introduced to business ethics.[130] In the framework of social contracts, procedural fairness is explicitly formulated.[131] Similarly, economics has only recently realised the explanatory potential of procedural fairness and its impacts on economic behaviour.[132] The first theoretic economic account of procedural justice based on game theory is very recent.[133] From the economic perspective the defining feature is that: "people have non-consequential preferences in which they treat the same monetary outcome differently, depending on the process that leads up to it."[134] This is very intuitive, if one regards a simple example. Persons A and B have the same job in the same company. They are both equally qualified, they are of the same age, are both married with the same number of children and they show the same effort in doing their job. However, person A earns 20 per cent more than person B. Regarding distributive justice evaluating the outcomes only, this is clearly unfair. But if for example both jobs have been negotiated and person A is simply much more gifted at negotiating, the inequality becomes less disturbing. Or consider if for example there is an annual lottery for workers A, B, C, D, all alike in the relevant job variables, where the lottery determines one individual will earn 20 per cent more than the others for a year. In this case the disparity in payments

does not seem unfair at all. Hence the origin of an outcome situation strongly affects its perception.

Coming back to behavioural economics, it is often argued that outcome-based models cannot fully capture experimental evidence in bargaining games.[135] This suggests that people derive more dissatisfaction from unfair treatment, i.e. procedures, than from unfair distributions.[136] So in the worker example it does not really matter what the difference in payment would be, as long as everyone agrees on a fair procedure to determine some inequalities. This understanding of procedural fairness is affirmed by research in psychology confirming that people prefer to accept decisions, which have been made with procedures all participants have perceived as "fair".[137] Integrating intentions and procedures in the decision-making process, procedural fairness also goes beyond the boundaries of standard game theory, which only accounts for pay-off structures, i.e. outcomes. Procedural justice and procedural fairness are likewise a venue for ethics and behavioural economics. Hence some newer accounts try to reconcile procedural fairness and the economic decision-making process.[138] Concerns for procedural fairness also comprise issues such as opportunism, possibility of punishment, accountability, transparency and active deception. Finally, a very recent experimental study comparing different theories of fairness has confirmed that intentions, and not outcomes, are the key to understanding perceived economic fairness.[139] After having established the importance of procedural fairness, its key determinants need to be discussed now. In this regard, it is important to distinguish between criteria for fair procedures on the one hand, and different allocation procedures on the other hand. The general criteria build a meta-level for the individual procedures. Starting with *fairness criteria*, an extensive literature review by Tyler identifies four elements shaping fair procedures, i.e. participation, neutrality, trustworthiness of authorities and treatment with dignity and respect.[140] Coming to the *fair allocation procedures*, Kahneman *et al.* focused on auctions, lotteries and queues, based on their research on fairness in economic settings.[141] More extensively, Sondak and Tyler consider: market pricing; lottery; discretionary authority; seniority; voting; and consensus.[142] Bearing in mind the focus on business ethics and order ethics, markets as the natural place for economic exchange and lotteries as an integral element to scrutinise decision theory are taken as the two central concepts in the following. Lotteries are also a very suitable vehicle to investigate the game theoretic foundation of fairness perceptions.[143] Here the basic idea is that unfair outcomes chosen by an agent are perceived as more unfair than the same outcome implemented by a lottery. Based on this finding implementing randomisation is a very effective way to resolve issues of procedural fairness. For this reason of perceived impartiality, lotteries are very popular for deciding on social distributions as, for example: jury selection; tax auditing; allocation of public housing; and scarce medial resources.[144] Furthermore, many people generally dislike markets.[145] The main reason for this reluctance is their perception of markets as unfair institutions.[146] Nevertheless, markets are the central economic institution and cannot be substituted or circumvented. Moreover, based on experimental evidence there are three key

determinants to implementing fair procedures: accuracy; voice; and consistency.[147] Chance and contingencies must be controlled for with accuracy, so that the procedures are reliable. For voice, every decision maker or in fact every one affected by a decision must have the right to participate in the respective procedures. Here usually the discussion of equal voice or voice which is weighted by some standard ties in. Finally, consistency means that the mechanisms for the fair division can only work if there is no possibility of changing the outcomes of the bargaining process in retrospect.[148] Hence consistency is often argued to be essential for perceived fairness of procedures. This also relates to game theory and order ethics, where the governing rules must be set out and no changes can be allowed. In conclusion there are two kinds of criteria for procedural fairness. First there are allocation rules, such as markets or lotteries. Then there are behavioural criteria to contribute to perceived fairness, i.e. accuracy, voice and consistency.

5.3.2 Designing fair procedures based on reciprocity

In designing fair procedures, reciprocity plays a central role. Therefore this section starts with a characterisation of the reciprocity mechanism in ethics and economics, before moving on to design aspects. In this regard, it highlights the importance of reciprocity as already discussed with regard to the scope of cooperation in Section 3.3.

Reciprocity is a standard concept in social psychology, ethics and economics. It basically comes down to reacting positively to positive actions and reacting negatively to negative actions.[149] Thus it just generalises what ethicists subsume under the "golden rule" which states: don't do something to others, which you would not approve of yourself. The concept of reciprocity has extensively been discussed and defined by Hume with his conception of sympathy.[150] Smith has also remarked that nature has equipped mankind with a sense of "mutual kindness".[151] Nevertheless, in the history of anthropology since Darwin the importance of reciprocity has always been underestimated.[152] More recently, Rawls's "theory of justice", following the contractarian tradition, has also been interpreted as a theory of reciprocity.[153] Supporting his argument, experiments show that children already realise that reciprocity is often necessary to achieve mutual agreement.[154] Overall, the combination of social contract theory and reciprocity in ethics is still a viable approach.[155] Binmore stresses this point, stating that "it is probably uncontroversial to suggest that we are natural imitators."[156] After all, the inclination towards reciprocity might be rooted deeply in our evolution.[157] Hence reciprocal and procedural aspects of decision making must not be neglected in both economics and ethics.

Based on the ethical tradition, reciprocity is becoming increasingly important for the progress in economics. It can even be argued that ignoring reciprocity in the analysis of economic interaction would also mean failing to model the real nature of human cooperation.[158] Finally, reciprocity moved on from pure game theory to become a key topic of behavioural economics with the analysis of

tit-for-tat strategies as the explanation of the evolution of reciprocal altruism in the infinitely repeated prisoner's dilemma.[159] Here it turned out that "tit-for-tat" as a naive approach to reciprocity is not necessarily the best strategy. Nevertheless, the most successful strategies always incorporate some reciprocal patterns to perform best in the repeated prisoner's dilemmas.[160] More specifically, social norms are also clearly driven by the reciprocity concept. Accordingly, one builds expectations of other's behaviour and considers them in one's decisions of what to do.[161] So in a community where one expects everyone to perpetually lie, one would have to take this expectation as a reason to lie as well.[162] Thus trust is a central component supported by reciprocity and it can be argued that trust could not have evolved without some social norm of reciprocity.[163] Only recently a comprehensive model based on the reciprocity intuition has been developed as a full "theory of reciprocity."[164] Reciprocity can also be used for manipulation. So the common sales technique of free gifts exploits reciprocal mechanisms, as it makes many people feel obliged to repay the favour.[165]

In the following, the focus is put on the strategic potential of reciprocity in combination with punishment. Evidence from behavioural economics shows that standard reciprocity cannot fully explain fairness shown in economic experiments.[166] Therefore it needs to be pointed out that only repeated games can be used as the foundation for strategic reciprocity. This is also the most realistic representation for most economic interactions. Accordingly, economic models of reciprocity are based on dynamic games and assume the prevalence of social preferences as common knowledge.[167] Further, there is a distinction between positive and negative reciprocity. Positive reciprocity comes down to rewarding desirable behaviour and negative reciprocity to punishing undesirable behaviour. Negative reciprocity is usually studied with ultimatum games.[168] It can be found in the typical behaviour of the proposer making an unfair, low offer and the receiver rejecting this offer. Here the receiver punishes the proposer at a personal cost. In contrast positive reciprocity can easily be found in trust or gift exchange games.[169] Experiments on these games typically show that when receiving a favour, this is usually reciprocated. Having a closer look at the respective experiments, it turns out that punishment is more effective and used more often than rewards. Human agents are more likely to punish harmful behaviour than to reward friendly behaviour.[170] This asymmetry can also be shown to be stronger for stakeholders than for spectators.[171] So, evidently, personal involvement increases the impact of both rewards and punishments on individual behaviour. This distinction is well established by now and results in the definition of strong reciprocity as "a predisposition to cooperate with others, and to punish those who violate the norms of cooperation, at personal cost, even when it is implausible to expect that these costs will be repaid."[172] Thus strong reciprocity involves a propensity to share and cooperate as the default option.[173] From a moral point of view, the punishment can be justified with its power to prevent opportunistic or immoral behaviour of other agents.[174]

Regarding fairness it is also evident that fair procedures lead to higher rates of cooperation.[175] Here it can also be shown that already perceived fairness has a

positive affect on the willingness to pay.[176] This is corroborated by the perception of rights and fair procedures. Accordingly, arbitrary assignment of rights can lead to a perceived unfairness and players not wanting to exploit their advantageous position, e.g. in bargaining experiments. By contrast, earned advantages are usually fully exploited with no moral inhibition or regret.[177] In conclusion, the overall evidence annihilates the sole focus on distributive justice. Research from behavioural economics can forcefully demonstrate the importance of procedural fairness and the underlying mechanisms. It establishes a new dimension of fairness based on intentions and actions, rather than outcomes.

5.4 Behavioural fairness impacts on order ethics

Based on the ethical and behavioural economics investigations of justice respectively fairness, I need to determine the impact of their new insights on order ethics. Therefore I have focused on the distributive principles of equity, need, merit and efficiency, social preferences of fairness, i.e. inequity aversion and the procedural fairness foundation of intentions. Inequity aversion as the most important class of outcome-based social preferences is employed to deal with concerns about distributive justice and efficiency. Then reciprocity is taken up as the primary approach to procedural justice.

5.4.1 Outcome fairness, efficiency and institutional design

In this section outcome fairness, as represented by models of social preferences is related to order ethics. Here some potential criticism is rebutted and the institutional application of fairness for order ethics is outlined. Therefore the robustness and universality of social preferences are substantiated. In doing so, I focus on models of inequality aversion as already demonstrated, without deciding whether absolute pay-off deviations or relative pay-offs are a better representation for the assessment of monetary outcomes.[178] This also helps to obtain universal results not only relying on one particular model.

In ethics there has also been some work on concepts translating to social preferences, especially with regard to economic concerns, for example Harsanyi's conception of "extended sympathy preferences" and Binmore's "empathic preferences".[179] Moreover, fairness is still debated in philosophy as it constitutes various paradoxes.[180] Altogether, there is a general trade-off between fairness and efficiency which imposes ethically relevant issues. This basic conflict of economic fairness can be found in the difficulty to weigh off equality and efficiency.[181] Thus the standard order ethics objection to fairness would be that efficiency rather than fairness must be the driving force for economic interactions. After all, only incentive-compatible rules are suitable to govern economic behaviour in the order ethics framework. This objection was refuted with an experiment, showing that motives of inequality aversion dominate the preference for efficiency.[182] Furthermore, in order ethics it is often argued that social actions are only a case of long-term cooperation for one's own benefit, under the maxim of

full rationality.[183] After all, order ethics focuses more on institutional settings rather than on individual preferences.[184] Hence the crucial question is the stability or robustness of social preferences under the condition of competition. In order to be relevant to ethical theory the concept must be resilient. So motivations of justice and inequity aversion can only be relevant in the long run, if they are stable. Regarding the required robustness, it has to be pointed out that not all people behave according to social preferences and those who behave according to social preferences do not necessarily share the same preferences. But nevertheless, experimental evidence shows that most people respect some social preferences and only very few act on the basis of strict self-interest.[185] So on the market level, the existence and application of social preferences can be taken for granted due to the majority of people exhibiting such preferences. Evidence from experimental markets also shows that economic theories dispensing with the self-interest assumption still reach solid predictions.[186] So the process leading to equilibrium is very stable.[187] Moreover, it has to be pointed out that the models of social preferences do not assume some fixed set or combination of preferences. They are able to represent continuums of preferences ranging from strict self-interest to full altruism. In these economic models of fairness, self-interest is only the extreme case, which can still be represented with resort to strictly rational behaviour. This makes them compatible with order ethics demands both in terms of robustness and the possibility of including strictly self-interested behaviour. Hence social preferences can be seen as an empirically founded extension of strictly self-interested agency and also a specification of the economic and order ethics model of mutual advantages.

Social preferences provide us with a much richer picture of observable human anthropology, which is more precise than the artifical assumption of strict self-interest still found in neoclassical economics. This is also ascertained by Lütge who argues that empathic preferences alleviate the economic problem of cooperation, but that cooperation must still be possible under the conditions of strict self-interest.[188] Hence order ethics does not conflict with social preference models, and outcome fairness is a potential source for improving the institutional design in order ethics. Especially, the combination of bounded rationality and social preferences promises an innovative extension for the theory. Taking the case of price fairness as an example shows that recent evidence proves reference price, seller cost and perceived seller motive to be crucial.[189] Reference price relates to prospect theory, i.e. bounded rationality as discussed in Chapter 4. Seller cost ultimately comes down to rent-sharing between seller and buyer which can be considered from the perspective of distributive fairness and social preferences. Finally, the seller motive covers the intentions and procedural aspects. This ties in with the example of snow shovels already given. Generally, it has been shown that for the measurement of fairness, reference points are very important. That is a twist not considered by most theories on distributive justice and neither does order ethics regard reference points. So inequality becomes widely accepted, when nobody makes losses relative to his status quo.[190] Hence order ethics should rather focus on relative outcome changes instead of absolute

terms. To some extent this is already reflected in the focus order ethics puts on rules rather than actions. In general, inequality aversion is very suitable to act as a driver for social stability. Thus models of social preferences resurrect the importance of equality as a very important principle of economic fairness.

Finally, with regard to behavioural economics and economic ethics, the economists have so far only studied the implication of social preferences and other norms, but they have not discussed their endogenous evolution.[191] Here first evidence from neuroeconomics suggests that a predisposition for moral sentiments is rooted in the human brain. In that sense, fairness is closely related to deontological intuition and not based on a utilitarian calculus.[192] Thus fairness cannot be circumvented or ignored, as it is deeply ingrained in the human cognitive capabilities.

5.4.2 Procedural fairness: incomplete contracts and reciprocity

As already argued with reference to economics, the distinction between outcomes and intentions is important for any moral assessment. Accordingly, behavioural economics suggests that social utility theory must incorporate both outcomes and procedures.[193] As the previous section has already made the case for outcomes, the focus now shifts to the procedural and intentional aspects of fairness.

Different intentions can be modelled as different alternatives in the ultimatum game, which are given to the proposer. Under these conditions it has been shown that different intentions provoke very different reactions on the side of the responder.[194] In turn, unequal distributions have low rejection rates, if the only alternative has been an even more inequitable distribution. There is one obvious explanation for the existence of fairness norms, i.e. in real life one seldom plays the economist's version of the ultimatum game, but rather a game in which equitable outcomes are mutually beneficial.[195] Along these lines, creating a win-win situation as advocated in order ethics is one approach to conform to procedural fairness. Sometimes the corresponding procedural preferences, i.e. preferences over actions instead of outcomes are also denoted as moral preferences.[196] Furthermore, behavioural economics has shown that adults put a higher weight on intentions than children and teenagers, whose behaviour can mainly be explained with resort to outcomes.[197] Thus decisions about fairness become more complex with age, as adults display a complex interplay in weighing off intentions and outcomes. These findings are also in line with psychological theories on the development of moral standards whilst growing up.[198]

However, procedural fairness has not yet been integrated into order ethics, which focuses on distributive fairness only. But a procedural element in order ethics could be used as a suitable mechanism to deal with the problem of incomplete contracts. So it has already been put forward that: "morality understood as fairness, integrity, trust etc. has the task to absorb the uncertainty of incomplete contracts and thus to reduce the costs of interaction."[199] In this regard, fairness as strong reciprocity can be considered as a means to design fair and efficient

procedures governing economic transactions. One key motivation for order ethics is that asymmetric information prevents complete contracts from being enforceable.[200] Coming from behavioural economics, reciprocity can be used to improve the enforcement of incomplete contracts, as the only realistic mechanism for economic agreements.[201] Even though reciprocity is not binding on a legal perspective, it is morally desirable and its successful application has been proven by behavioural economics. So the perceived intentions of fair or unfair behaviour have important consequences for both positively and negatively reciprocal behaviour.[202] This could also encourage order ethics to consider lotteries as a mechanism for institutional design. As argued in Section 5.3.1, lotteries are often perceived as fairer than traditional markets as they are more transparent and not prone to nepotism. Hence the acceptance of policy changes could be increased by using this mechanism. Moreover, the simple criteria of fair procedures, i.e. accuracy, voice and consistency must be complied with.

Experimental evidence shows that there is no unique fairness norm, but multiple distributive and procedural norms which are all necessary and coexistent. From the traditional order ethics perspective the outcomes are more relevant than the original intentions.[203] However, behavioural economics reveals that in fact perceived intentions and outcomes are often considered equally in economic decision making.[204] Whilst there can be a debate about whether outcomes and procedures are equally important, it is well established that both aspects play an important role. In conclusion, there is evidence in behavioural economics that three elements shape our strategically rational economic decision making, i.e. distributive preference, reciprocal preferences and yet some self-interest.[205] Current order ethics in the social contract tradition insists on making rules compatible with the neoclassical notion of strict self-interest, even though it explicitly acknowledges the various forms of empathic or social preferences. But based on behavioural findings this rigid conception can be relaxed, as economic agency seldom relies on strictly self-interested behaviour. Market interactions are characterised by some natural concerns for economic fairness and hence social preferences and reciprocity could also be integrated into order ethics' already sound economic foundation. This does not mean changing the theory of order ethics, but shifting the focus for the future debate on the already established idea of mutual advantages, which can be broken down to strategic self-interest, reciprocity and social preferences.

6 Business ethics based on virtues and behavioural economics

Virtue depends partly upon training and partly upon practice; you must learn first, and then strengthen your learning by action.

(Seneca)

In this chapter the focus is shifted to business ethics. Therefore the very popular virtue-based approach to business ethics is pursued. So the cardinal virtues of ancient philosophy and some potential extensions taken from the business ethics literature are related to concepts of behavioural economics to assess their compatibility with basic economic mechanisms and necessities. As a result prudence, justice, trust and responsibility are proposed as modern virtues of business ethics, which are based on sound economic foundations.

6.1 Virtue ethics in business ethics

All approaches to economic ethics cannot fully capture the normative elements of all business transactions by design. Thus in the following the perspective of business ethics as a complement to economic ethics is taken. In particular, it is shown how the traditional line of virtue ethics can be related to theories of behavioural economics.

6.1.1 The need for virtue based business ethics

In Aristotelian ethics *eudaimonia* is considered the most basic and necessary good.[1] Since then the notion of *eudaimonia* and how it is to be achieved is central to accounts of virtue ethics. The term itself can best be translated as "flourishing", "happiness" or "well-being". Attention should be paid to the fact that here happiness does not refer to a primitive trivial conception as it does in hedonism, but rather to a happiness containing true value and deep meaning.[2] For Aristotle, virtue is necessary but not sufficient to achieve *eudaimonia*. An alternative ancient conception of the virtuous life can be found with the cynics, who despised the holding of conventional values and promoted frugality.[3] The most prominent proponent of this neglect of all values has been Diogenes.

Generally, virtues are dispositions of character which are used to accept or reject certain actions on the basis of ethically relevant criteria.[4] Thus virtue ethics emphasises the individual character to govern decision making and behaviour.[5] By contrast, the notion of value is wider than that of virtue as it lacks the personal focus to achieve internal goods.[6] Values can be defined as something worth having, doing or achieving.[7] However, virtues are defined as dispositions to pursue a certain good.[8] Being a virtuous person becomes manifest in a certain attitude or mindset. And individual well-being is only ensured when acting in accordance with virtue.[9] In summary, virtue ethics is distinguished by its flexibility and broad foundation, which does not rely on only one central principle. Consequently, according to MacIntyre a virtuous life does not require us to act rightly in every way and at any time. Sometimes wrong decisions are simply unavoidable. But nevertheless, deliberately ignoring the demand of ethics in one area of our life renders one completely unethical.[10] Considering the popular tradition of virtue ethics it is only straightforward to develop a specific business ethics based on virtues.[11]

Business ethics is not a substitute for economic ethics. But it is a necessary supplement, because much moral behaviour can never be contracted on the layer of rules and institutions. After all, every incomplete contract bears a risk. And more importantly, there are always cases which cannot be treated with standardised regulatory approaches. Order ethics also explicitly stresses that there are economic ethics and business ethics.[12] Hume realised that virtue ethics can be perceived as a powerful complement to other ethical theories, rather than a strict alternative.[13] In fact, every ethical theory should account for virtues as a basic element of our social life.[14] Or, more precisely, "virtue lies in the reasons for which one acts, rather than in the type of action one performs."[15] Thus all accounts of virtue ethics are ultimately based on a teleological argument. Moreover, virtue ethics is empirically founded. Thus it fits into the research programme outlined in Section 2.4.3, which puts emphasis on a combination of normative and empirical elements to derive morally and practically relevant conclusions. As Sen illustrates with his fruit passing game, elements of virtue or social norms such as noble manners can also be explicated with reference to the game theoretic framework.[16] However, the game theoretic analysis is not the focus for this chapter.

The order ethics approach to business ethics is based on the theory of incomplete contracts.[17] However, the current mainstream of business ethics stresses the importance of virtue in business ethics both for individual agents as well as organisations.[18] In particular, Solomon argues how community is the basis for developing individual virtues.[19] Hence the individual is the central entity for finding and applying virtue ethics. This proves ethical approaches focusing on the individual are particularly useful. Moreover, determining the relation of order ethics and virtue ethics is necessary. A first objection to virtue-based ethics from the perspective of modern order ethics is its narrow anthropological foundation and focus. For example, one can doubt the anthropological assumption that human beings have an innate need for morality.[20] Also its social

underpinning remains questionable. Order ethics points out that globalisation has changed the standards of our social life and that virtuous behaviour is much more difficult to observe and to sanction when the social group grows.[21] However, there is a promising connection between order ethics and virtue ethics, which can be found in the general scope of normative theory. Here both virtue ethics and order ethics agree that hypothetical imperatives are sufficient.[22] This implies that normative reasoning does not always have priority and thus accounts for the empirical evidence regarding human nature and limited decision-making capabilities. This conception stresses the view taken in this book that order ethics and now also virtue ethics are very accessible with empirical evidence taken from behavioural economics. Moreover, order ethics points out that every ethical theory, including virtue ethics, must not try to establish morality in contradiction with the individual's benefits.[23] Hence the account of modern virtue-based business ethics, as developed in the following, advocates morality as enabling economic interactions and advancing their efficiency. This is also in accordance with the general line of argumentation in this book, where virtue ethics is substantiated with behavioural economics. Thus economic benefits and individual morality are aligned with this approach. Having established the essentially complementary nature of order ethics and virtue ethics, for the rest of this chapter I focus on the virtue-based approach to business ethics.

In addition to the purely normative considerations, virtues-based business ethics can be motivated by economic benefits arising from virtuous behaviour of individuals or organisations. After all, ethics and economics are clearly intertwined and a lot of ethics is framed in the interaction of individuals with businesses. Accordingly, from an individual perspective, everyone makes decisions as a customer, investor, employee, employer, manager or citizen that affect the economic sphere.[24] Thus at least ethics, to a large extent, can be implemented by the individual or as the result of the aggregation of individuals' moral consent. Solomon for example has devised a whole new theory of business ethics based on virtue theory.[25] He argues that virtues are the best solution for the individual to overcome a dilemma situation and to act morally right.[26] From an organisational perspective, the importance of virtues in business ethics is an empirical fact and can be substantiated with benefits on efficiency. This increase in efficiency is typically caused by a reduction of transaction costs, which benefits from positive externalities of virtuous behaviour. Virtues are typically integrated in an organisation by means of corporate value codes, which represent a "nucleus of values" which is central to all their business activity.[27] The idea is to govern the moral behaviour of a company by aligning it with certain key virtues, which are then to be respected by all employees. Such corporate codes naturally revolve around values such as "honesty", "excellence" and "autonomy". Moreover, corporate virtues relate to the individual perspective, as according to an UK survey 82 per cent of managers would not be willing to work for a company whose values they do not believe in.[28] In addition, a positive correlation between corporate virtues and its financial performance is frequently argued in the literature.[29] The respective arguments are usually based on transaction costs which are

believed to decrease with virtuous behaviour as a foundation for intercompany trust and market reputation.[30] Hence there is little evidence for market mechanisms crowding out virtues, which is the most frequent objection raised against the application of virtues to business ethics.[31]

Summarising the arguments, virtue is morally necessary and can be economically beneficial from an individual and organisational perspective. Thus "it is important now to see the ethics of virtue and the ethics of rules as adding up, rather than cancelling each other out."[32] Along the same lines, order ethics is supplemented by virtue ethics on the business ethics layer. Altogether, business without moral virtues would be inhuman and cruel, and doing business without respect to economic necessities would be self-contradictory and untenable in the long run.

6.1.2 Relating virtues and business ethics with behavioural economics

One prevailing shortcoming of business ethics is to confuse its relation to economic theory. Here, most authors are overly pessimistic in their diagnosis of business and ethics being antagonising forces. They are following Friedman's statement that the sole responsibility of business is business.[33] On such a view, economics is only concerned with maximising profits and individuals are only driven by self-interest. However, economics is also rooted in the moral philosophy of Adam Smith.[34] Thus it suggests itself to think about the development of the relation between economics and ethics since its inception. In this matter, I find that the field of behavioural economics shows a recent convergence of ethics and economics. This was already demonstrated with the discussion of order ethics in regard to cooperation, rationality and fairness, in the previous chapters. It was also established that human interaction is the central theme for both disciplines and hence virtue ethics in particular is strongly tied to the new paradigm of behavioural economics. Moreover, this paradigm can make important contributions to the future discussion of business ethics, offering empirical evidence on the nature and limits of human decision-making capabilities.

Thus the approach taken in the following pursues strong ties of behavioural economics and ethics. Consequently, regarding the connection of business with virtues, it is often argued that efficiency is the only natural virtue of business.[35] This line of argument implies a sharp opposition of business and moral virtues. But Adam Smith realised that business behaviour and moral virtues are inextricably linked. Thus he insists that life, in all its aspects, has to be lived according to the virtues of prudence, justice and benevolence.[36] He also recognised that business and morality are not opposing spheres, but can fruitfully be combined.[37] Therefore it can be argued that Smith is not only the founder of economics but also of business ethics.[38] And obviously, this relation of business and moral virtues has subsisted as a popular approach to business ethics.[39]

A lot of criticism against economic models and theories originates from their focus on self-interested profit maximisation and the disregard of moral virtues.

But economic models have never opposed morality or neglected its existence. These models have been and are only approximations of reality. Moral concerns may have been neglected only because they have been seen as too complex and diffuse to formalise them. However, as already presented in Section 2.4, the field of behavioural economics has recently developed new models formally based on game theory, which do not make any explicit assertions about morality but which are making additional assumptions about the social preferences of economic agents. Even though social preferences are not synonymous to virtues, with moving from mere self-interest to social preferences, economic models can, for the first time, formalise virtuous behaviour.[40] Again, it was Smith who argued that human beings have intrinsic moral capacities which, for example, become visible in the general sympathy for their fellows.[41] Experimental evidence confirms that most people respect at least some social preferences.[42] Along these lines, Foot points out that a clear conception of human nature is the necessary foundation for virtue ethics. After all, some parts of human character are naturally determined and have a central importance to social cooperation and ethical theory.[43] Therefore a discussion of virtues in the light of behavioural economics theory is deemed necessary.

6.1.3 Overview on virtues in ethics and business ethics

To explore the relation of virtues and behavioural economics, I give a short overview on virtues in ethics and business ethics. This overview is then systematised and condensed into a set of virtues which can be discussed in accordance with behavioural economics theories in the next sections.

The ethical tradition of Western virtues ethics goes back to Plato and even more importantly to Aristotle.[44] Plato focuses on the four cardinal virtues of courage, temperance, wisdom and justice, whereas Aristotle expands his system to two classes of virtues. The first class constitutes virtues of thought such as art, knowledge, practical judgement, wisdom and intellect (the 'dianoetic' virtues). The second class comprises virtues of character, resembling Plato's cardinal virtues of courage, temperance, prudence and justice.[45] Generally, virtue ethics has always been one of the central streams of ethical theory. In contrast to other ethical approaches, virtue ethics focuses on the good character of moral agents and dispenses with individual duties or the consequences of actions.[46] Thus virtue ethics is also deliberately abstracting from procedural elements of decision making. Furthermore, there are also some influential contemporary accounts proposing virtues as the central element to ethical thinking.[47] On this basis the most important virtues have not changed since the ancient Greeks. Consequently, Foot still insists on courage, temperance, prudence and justice as the cardinal virtues of modern times.[48] Similarly, Nussbaum focuses on: justice; temperance; hope; courage; love; faith; and prudence.[49] Respecting the predominance of ancient roots in most modern accounts of virtues ethics, I roughly follow the Aristotelian notion of virtues, which comprises both moral and intellectual virtues. But whilst investigating a broad spectrum of moral virtues I put a focus on prudence as the

main intellectual virtue which suffices for the scope of business ethics. Besides, I follow Aristotle in understanding moral virtues as a mean between excess and deficiency. Turning towards virtues in business ethics I start with a short review of the relevant literature. In this context Table 6.1 gives an overview on moral virtues currently discussed in the field. As the respective sources indicate, most of these virtues have their origin in Aristotelian ethics. This line of thinking has also had a huge inspirational impact on many theories of business ethics.

In order to structure the overview I introduce the distinction between primary virtues and auxiliary virtues. Primary virtues still relate to the classical cardinal virtues in ethics and auxiliary virtues typically just support these virtues. For example, temperance as a primary virtue is supported by individual self-control; trust is the virtuous end which is supported by the means of honest behaviour, and so on. This overview excludes the Aristotelian virtues of magnificence, greatness of soul and "wittiness" (Greek: *eutrapelos*) from the start, as they are too abstract for a discussion within the context of business ethics. Moreover, the auxiliary virtues are neglected for the following analysis, as they cannot be integral to business ethics. Hence the remainder of this section motivates, why courage, temperance, prudence, justice, trust and responsibility remain as the most promising key virtues of modern business ethics.

The first four virtues are identical to the four cardinal virtues, i.e. *courage*, *temperance*, *prudence* and *justice*, as introduced by Plato and Aristotle.[50] These virtues are still discussed and their importance is stressed both in the standard ethics literature as well as in business ethics.[51] Thus they cannot be excluded from the following analysis. Subsequently, *trust* or *truthfulness* in the Aristotelian tradition can be marked as a virtue relevant to business ethics. Trust is crucial for the individual moral behaviour.[52] Moreover, it is vital to businesses because it reduces transaction costs.[53] Furthermore, it is the central concept in the areas of controlling, accounting and governance, which emphasises its practical business relevance.[54]

In this regard, honesty constitutes an auxiliary virtue for establishing trust in personal relationships. For one person to trust another equals assuming he is honest. Therefore trust and honesty are argued to be amongst the cornerstones of every free society.[55] Similarly, *responsibility* is a virtue promoting human interests. Also, it is sometimes argued to be the key value for business conduct.[56] Applying business responsibility is often advocated as corporate social responsibility.[57] This follows the virtue ethics tradition and tries to dispense with the narrow utilitarian focus in ethical theory. On this account profit is just one end in a complex equation. Moreover, an influential empirical investigation by Singer has confirmed the importance of "responsibility, justice, fairness and trust" for an ethical work behaviour.[58] This supports the relevance of considering trust and responsibility as additional virtues of modern business ethics.

Table 6.1 Overview of moral virtues in ethics and business ethics

Primary virtues	*Sources*	*Auxiliary virtues*	*Sources*
Courage	Aristotle (2003); Ewin (1995); MacIntyre (1984); Whetstone (2001); Solomon (1999a)	Friendliness	Aristotle (2003); Solomon (1999a); Shaw (1997); Ewin (1995)
Temperance	Aristotle (2003); Whetstone (2001); Solomon (1999a); Moberg (1999)	Self-control	Maitland (1997); Arjoon (2000); MacIntyre (1984); Hirsch (1978)
Prudence	Aristotle (2003); Solomon (1999a); Moberg (1999); Shaw (1997); Arjoon (2000); MacIntyre (1984)		
Justice	Aristotle (2003); Solomon (1999a); Ewin (1995); MacIntyre (1984)	Fairness	Maitland (1997); Solomon (1999a); Lütge (2005); Schwartz (2002)
		Generosity	Aristotle (2003); Ewin (1995); Maitland (1997); Solomon (1999a); Moberg (1999)
		Liberty Freedom	Aristotle (2003); Solomon (1999a) Shaw (1997); Solomon (2000)
Trust	Aristotle (2003); Solomon (1999a); Maitland (1997); Moberg (1999); Whetstone (2001); Hirsch (1978); Lütge (2005); Schwartz (2002)	Honesty Honour	Ewin (1995); Hirsch (1978); Schwartz (2002) Aristotle (2003); Solomon (1999a); Moberg (1999)
Responsibility	Shaw (1997); Schwartz (2002); Solomon (1999a); Moberg (1999)	Reliability Integrity	Shaw (1997); Lütge (2005); Schwartz (2002) Aristotle (2003); Solomon (1999a); Moberg (1999)

6.2 Analysis of moral virtues

Now I proceed with analysing the six virtues identified as potentially new cardinal virtues of virtue-based business ethics. In doing so the virtues are related to concepts from behavioural economics and it is revealed if and how they can be reconciled with economic theory. After all, a virtue which conflicts with basic human, social or economic mechanisms – which are all integral to behavioural economics – is not suitable for business ethics.

6.2.1 Courage conflicts with empirical risk-aversion

According to Aristotle, courage is defined as the golden mean between rashness and cowardice.[59] In economic decision making, the relation of rashness, courage and cowardice is represented by the corresponding concepts of risk-aversion, risk-neutrality and risk-proclivity.[60] More importantly, the moral virtue of courage, when interpreted as risk-neutrality, is also a standard assumption of neoclassical economics. However, risk-neutrality is rarely observed in real human decision making. Assuming humans to be mainly risk-neutral is a fundamental misunderstanding of their nature,[61] for experimental evidence exhibits that human beings are not open or neutral towards risks, but always prefer certainty, when facing a choice between different outcomes. Hence it is a matter of fact that human nature is risk-averse relative to some reference point.[62] This can be accommodated in descriptive theories of behavioural economics such as prospect theory.[63] In conclusion, the normative concept of courage as a cardinal virtue is disputable from a behavioural perspective, especially when interpreting courage as a synonym for risk-proclivity. Thus being cautious instead of courageous has a good rationale in behavioural economics.

6.2.2 Temperance based on a theory of self control

Aristotle perceives temperance as a mechanism of self-control.[64] Again, analogies can be drawn to theories in behavioural economics. First, I discuss self-control and commitment by picking up the idea that human beings have particular problems in controlling themselves in economic settings. People spend more money than they have, run into debt or make promises they cannot keep.[65] Thus, they need to institutionalise mechanisms of self-control to commit and control themselves.[66] Second, the problem becomes relevant with regard to the perception of time. According to neoclassical theory, human beings use exponential discounting to weigh off future decisions, thus assuming certain (constant) discount rates. Hence decision makers should be indifferent between interests or utilities in the present and the future.[67] But instead, decision makers unconsciously use *hyperbolic functions* to discount utility.[68] This again reflects the distinction between normative and descriptive accounts of theory. The standard theory based on the rational choice paradigm just assumes discount functions to be exponential, which seems to be rational. However, behavioural theories,

based on the investigation of real human behaviour, realise that at least for some settings hyperbolic functions are an empirical fact of our human nature. Also this account seems to reasonable, especially remembering Section 4.2, where a decision maker was confronted with a choice between taking $100 today or $110 in a year. In this scenario the majority of people opt for the cash today. But when framing the decision as either $100 in a year or $110 in two years, people can resist the urge of immediate gain and prefer the second, more rational alternative.[69] This indicates that there is a natural propensity to value the present over the future. This finding is very intuitive, for example when observing how children perceive time and give in to immediate desires. Nevertheless, it is impossible to explain such behaviour with standard economic theory. Overall, temperance in the sense of Aristotle cannot be confirmed as an adequate virtue from a behavioural economist's perspective. Moreover, from a game-theoretic perspective, the concept of temperance is outdated. Pre-modern societies have been understood as societies playing zero-sum games, so the greed or superior ambition of one economic agent would have reduced the overall social welfare. However, with the age of industrialisation and at the latest with globalisation, most Western economies and the worldwide economy have shifted to non-zero sum games. This is a fact which is also very present in the current accounts of order ethics.[70] This is based on the advantages of individual specialisation and on the fact of continuous growth with only temporary setbacks, which are minor in the overall picture. In conclusion, temperance is not applicable as a virtue to modern business ethics in societies with significant growth, since it lacks an economic rationale in individual as well as interactive decision making.

6.2.3 Prudence restricted to bounded rationality

For Aristotle, prudence is all about deliberation. More precisely, it is about finding out what is advantageous for oneself.[71] Similarly, Smith has identified prudence, based on the concept of individual advantages, as a central virtue for the functioning of business.[72] Accordingly, mutual advantages are the motivational basis for cooperation in business ethics.[73] In this regard Gauthier argues that cooperation in the prisoner's dilemma is possible under the assumptions of self-interest and rationality, when the players epitomise the virtue of prudence.[74] His idea of constrained maximisation dispenses with the maximisation concept of utilitarian theories and also forms expectations of reciprocity, i.e. animating other players to also behave prudentially. So far, rationality is defined as the pursuit of individual self-interests, but research in behavioural economics shows that this is an insufficient definition.[75] The concept of bounded rationality intimately connects ethics, economics and psychology. Whereas psychology is classically concerned with the cognitive limitations underlying rationality, economic theories explicitly model rationality and more recently bounded rationality,[76] bounded rationality relaxes assumptions regarding the cognitive power of decision makers to gather full information and to perfectly weigh off all possibly resulting alternatives.[77] Hence a modern conception of rationality should not rely

on self-interest only. Moreover, prudence relates to the idea of social preferences as already discussed in Chapter 5. The concept of conditional cooperation promoted along these lines renders social preferences a special case of prudence. Overall, the moral virtue of prudence understood as rationality is a necessity. It is a basis for ethics and its application a benefit for business success. However, the exact definition of rationality remains subject to further discussion as already concluded in Chapter 4.

6.2.4 Justice established by fairness and social preference

In ancient philosophy, justice was amongst the first moral principles. For example, Aristotle highlights it as the "sum of all virtues".[78] For him, justice was all about governing the interactions of individuals in a society. This valuation was later continued in the discussions of Locke and Bentham.[79] Then Smith stressed the point that justice has a central role in stabilising society, an idea which reflects the philosophical tradition and also its economic importance.[80] Therefore justice has become one of the pivotal and permanent concerns of economics.[81] In the recent literature on behavioural economics, the term justice is usually substituted by fairness.[82] However, the absence of the concept of fairness in microeconomic theory has made the discrepancy between economic models and lay intuitions about human behaviour evident.[83] It has only recently been possible to reintegrate fairness into microeconomic models, by means of the concept of social preferences, which has already been demonstrated in Chapter 5. As a consequence, one of the most obvious relations of virtue ethics and behavioural economics lies in the concept of justice, understood as fairness. Therefore it is also a good starting point for ethical investigations, as social preferences automatically relate to ethics. In fact, social preference can even be interpreted as a form of moral virtues.

Consequently for discussing justice as a virtue, taking up the distinction between distributive justice and procedural justice is a good starting point. So following Rawls, justice can be distinguished for either institutions or individuals.[84] In this regard he also puts emphasis on the condition of fairness regarding the rules of free exchange.[85] Thus theories of fairness, distributive justice and justice as a virtue are very similar and moreover resemble the basic conception of mutual benefits.[86] Concerning procedural justice it has already been pointed out that virtue ethics explicitly dispenses with procedural aspects.[87]

From a business point of view, fairness is sometimes equated with irrationality.[88] For, within the paradigm of a Homo oeconomicus it is not rational to allocate resources in an equal manner, when a self-preference might have been enforceable. This conflicts with the virtue of prudence understood as direct instrumental rationality as just explicated. However, this prejudice is solely based on a short-sighted perspective of business, which does not adequately consider the long-term benefits. In fact, fairness as a moral virtue can easily relate to some key business values. So fairness in the sense of Pareto-efficiency clearly helps to promote efficiency within a business. Moreover, fairness and in

particular a reputation for fairness are assumed to directly promote the business's profit.[89] Coming to the relation of justice with behavioural economics, it focuses on the ideas of equity and thus models of inequity aversion and social preferences.[90] However, the idea of utilising game theory for the assessment of distributive justice theories is not new.[91] Binmore's project culminated in a theory of justice based on the social contract idea and using game theory as the formal foundation.[92] Complementing the formal game-theoretic modelling approach, experimental methodology is also an appropriate means to further analyse theories of justice. Thus operationalising criteria of justice makes them accessible to experimental verification.[93] The same can be said about the concept of fairness in behavioural economics, which has already been discussed with regard to game theory.[94] Consequently, the actual discussion in economics seeks experimental confirmation for the game theoretic models based on social preferences.[95] Economic experiments vary in their interpretation of which basic principles of distributive justice are the basis for contribution and distribution in, for example, public good games. Some authors choose efficiency as the motive for assessing distributions.[96] Others focus on deserts principles.[97] With regard to deserts-based criteria of distributive justice, empirical evidence suggests that differences in effort are the main justification for inequalities of distribution.[98] Overall, the general lesson of these experiments is that pay-offs in the sense of game theory are definitely not perceived as one-dimensional, i.e. only monetary. If anything, they are the results of social preferences, which might be interpreted as corresponding to additional individual moral virtues. All social preference models of inequity aversion assume that people have a socially motivated propensity to avoid very uneven distributions.[99] This assumption is backed by vast experimental evidence, for example from ultimatum and dictator games, indicating that people do not always act according to the self-interested equilibrium predictions of game theory. In the dictator game, people do not behave selfishly, even given that this would maximise their personal monetary pay-off. In the ultimatum game, the evidence also suggests that people punish others for being selfish, which only strengthens the moral impact of inequity aversion. In conclusion, justice as a virtue leads to behavioural economics theories of fairness. After having established the relation between justice and behavioural economics, I now make a case for the centrality of justice among all business ethics virtues. This is motivated by some popular themes in business ethics which trace back to the idea of justice.

The fact that fairness exists in our society seems self-evident, as its discussion has always concerned humankind.[100] The existence of fairness as a trait of human nature is undisputed and for example the existence and usage of lost-and-found offices proves that fairness is evidently embedded in human nature.[101] Similarly, the debate about the *justifiability of profits* has persisted longer than the system of capitalism.[102] It has always been a highly contentious issue in the public debate with increasing attention in the 1970s, when the oil companies' profits were first attacked in the broad media.[103] One superficial argument, to evade the discussion in the first place, is to claim that the morality of profits is independent

of their magnitude. This view assumes that once the right for profit is established this can be taken to be an absolutistic position and refuse any restrictions. However, there are more formal arguments which can establish the entitlement to and necessity of profits with reference to economic theory, for running a business is based on the investment of capital for its operation. And if this capital could alternatively be invested with a return which is at least the market interest, there would be no (financial) motivation for founding or running a business in the first place.[104] This would undermine the division of labour, which is driving our steadily increasing welfare.[105] Speaking about this form of Taylorism it is also commonly agreed that in the terms of game theory modern societies have shifted from being economics of redistribution to communities playing non zero-sum games. This means being driven by profits is ultimately a benefit for all.[106] In addition to market interest, it has to be considered that business is subject to operational risks and the capital invested might eventually be lost due to bankruptcy. Hence from a financial point of view a reasonable profit of business would be the market interest rate plus some compensation for taking the risk of creating economic goods, which is sometimes characteristically called "creating value" in the broadest sense. With the increasing professionalism of capital markets the theory of corporate finance can by now exactly measure the risk involved in certain business ventures and also calculate an adequate interest rate as the corresponding risk premium.[107] This usually depends on the company's industry, its size, its location and the general market conditions. In conclusion, economic theory justifies the necessity of an appropriate return as the main motive of conducting business without conflicting with the virtue of justice.

Adapting Rawls's view on the issue of *executive compensation*, he would postulate "a beneficial scheme of cooperation" and "free benefits". This means cooperation is viable, as long as it offers mutual benefits across all company levels, which is usually the case within businesses where a few people coordinate the activities of the majority along the business values of profit, productivity, quality and reputation. Hence it can be argued that the individual worker is better off in an organised and managed situation than he would be in a scenario where nobody organised a business and consequently he would be unemployed. Thus unequal payment can still relate to Pareto-efficiency on the economic level. For employees, fair payment quintessentially means an equal payment for equal work provided that it is conducted in the same quality and quantity.[108] Thus there is no moral basis for a prima facie rejection of unequal payments for unequal work. However, it remains a very important issue for theories of business ethics.

Following these deliberations, the current interpretation of justice as an individual virtue is central to a society and thus for an economy organised in accordance with the division of labour. Here, social justice implicitly rules the relations of individuals with one another.[109] Stressing its importance it can even be seen as "the main pillar that upholds the edifice" of society.[110] And according to some authors justice is still considered to be the most crucial virtue of all.[111] In conclusion, the modern conception of justice as a virtue is based on fairness as a matter of distributive justice and thus closely related to the broader concept of social

justice. Thus it goes along with behavioural economics by means of models of social preference. Moreover, its relevance is reflected in many central themes of business ethics such as executive compensations and justifiability of business profits. Overall, justice is arguably the most important virtue of business ethics.

6.2.5 Trust as reputation, reciprocity and reducing uncertainty

It was Aristotle who discussed the conception of trust in his *Nicomachean Ethics*. Here trust and trustworthiness were closely tied to the idea of friendship. He speaks of *synethêia* or intimacy, which can be said to be very similar to trust, as the basis for perfect friendship. Furthermore, he also mentions *alethêutikos* or truthfulness as being a primary virtue.[112] Since the works of Hobbes, trust is generally discussed within the theory of social contracts.[113] According to this view, trust follows an implicit contractual structure, where all participating parties waive certain rights in order to receive a greater benefit, such as protection or cooperation. The most efficient punishment for an untrustworthy person was realised by Hume who pointed out that the problem of untrustworthy behaviour is to "never be trusted again".[114]

From the business perspective trust clearly affects companies. Hence it is often argued that some trust is "mandatory for the optimisation of a system."[115] So the positive impact of trust is generally acknowledged, but the exact notion is difficult to define. However, any definition of trust must regard it as the outcome of interpersonal relations.[116] Trust is not necessary but beneficial to any social exchange. More importantly, "every commercial transaction has within itself an element of trust."[117] Today trust constitutes a central virtue, as it affects virtually all economic operations within and without a company.[118] Some authors further claim that trust is necessary to accomplish any economic transactions.[119] In a business setting the notion of trust focuses on the agreement of contracts,[120] thus it is in line with the ethical theory of social contract as a mechanism for enforcing trust. This relies on the idea of reciprocity, which can easily be found in most accounts of ethics, as a consideration for others is necessary to conduct moral reasoning.[121] With regard to business ethics, one crucial economic problem of cooperation is that complete contracts can usually not be specified. Hence there are always opportunities for unilateral or mutual exploitation. In this way, the resulting uncertainty about a transaction partner's reliability weakens market efficiency. Therefore, in reducing transaction costs, trust becomes an improvement to most economic transactions.[122] From an economic perspective, trust is required for cooperation and for the general flourishing of human societies.[123] For example, the simple purchase of resources would be a very costly venture in a business world without trust. The transaction would have to be protected against any possible uncertainty and as a result very comprehensive contracts would have to be set up to facilitate any transaction. In addition to the contracting costs, a lot of time would be wasted on preparing the transaction and all the time and effort required would again result in an increase of the overall cost. By contrast, a business environment based on trust can save a lot of time, effort and

cost, when both contractors know and trust each other. Then the contracts can simply be concluded orally, which is beneficial to both sides. In fact, since it is practically impossible and not cost-efficient to formulate perfect contracts for doing business, a lot of everyday business transactions are not based on formal contracts but on trustworthy word of honour. A good example for the efficiency of trust in business action can be seen at the world's stock exchanges, where billions of euros are traded each day. Here, the pricing as well as instantaneous selling and buying is accomplished on the base of open declaration only, simply because the traders have established enough trust to mutually trust one another.

With regard to game theory, trust is quintessentially reducible to self-interest. In this regard, the basic prisoner's dilemma shows that mutual trust would facilitate cooperation and thus Pareto-superior outcomes for all agents. Here the establishment of trust relies on the insight of both parties that mutual trust is highly beneficial in the long run and that exploitation has severe drawbacks in the long run, leading to inefficiency and potential punishment. Relating trust to the field of behavioural economics yields two related main points, i.e. repeated games and reciprocity. First, economic game theory in the form of the prisoner's dilemma can show how mutual trust is a necessary prerequisite to achieve ideal outcomes.[124] Moreover, the opportunity to punish untrustworthy behaviour is crucial for the constitution of trust. In this vein, behavioural economics stresses the concept of reciprocity.[125] In its basic form, reciprocity is a tit-for-tat strategy.[126] It can best be studied with reference to repeated games with partners matching, as the classic iterated prisoner's dilemma.[127] In such a setting it is typically observed that individuals use positive and negative reciprocity to educate their partners. Additionally, groups are found to be less trusting than individuals but just as trustworthy.[128] Gift exchange games also produce evidence favouring trust.[129] These considerations recommend that an institutionalisation of trust as reputation might be a solution in increasing cooperative behaviour in markets lacking trust.[130] Especially in a complex globalised society the efficiency of trust as a virtue relies on the formation of reputation. Experimental evidence from behavioural economics is very useful in studying the reputation mechanism. With a basic trust game, it can be shown how trust develops in a market setting.[131] This game also shows the fragility of trust, which is usually not sustained in a market, if some actors make use of their potential for exploitation. However, experimental markets show that formalised reputation significantly increases efficiency. Analogous to individuals, organisations can also employ reputation-building to increase the efficiency of business.[132] Here market research illustrates the economic power of reputation, where companies such as Coca-Cola, Intel or Gillette have an estimated reputational value of over $10 billion.[133] In standard economic terms this emphasises the signalling effect of trust and reputation. Another argument favouring reputation is reinforced by Luhmann, who argues that trust is apt to reduce the complexity of the otherwise unmanageable world.[134] Thus it can help enough to develop dispositions which are based on trust and simplify matters of greater complexity. For example, developing a disposition of trust towards a certain brand, as just presented,

makes one confident that it will always offer good products at a fair price. This attitude will then reduce the complexity of all buying decisions where the respective brand has an offering. On the company level, reputation is shaped by a variety of factors such as public appearances, the behaviour of individual employees, the media's references, consumer satisfaction, the workforce's motivation, the treatment of all stakeholders and finally internal communication. Here, public appearance in particular is highly significant in embellishing a business's reputation.[135] After all, it is commonly agreed that a good reputation or image has a positive influence on a business, at least in the long run.[136]

Translating reputation into the virtue of trust, it is usually claimed that trust in business will increase loyalty towards the business and its reputation.[137] This insight requires some more thought, as from a business point of view trust can also be a risky investment. As one of the contractors always has to reveal information first or has to make a bid first, this can be a disadvantage to his or her position. Therefore a dilemma situation can arise, where trust is first to be established between two parties. In such a scenario both parties have an incentive to exploit the trust which is offered to them, without reciprocating the trust. This problem is also stated by Luhmann as "it is not possible to demand the trust of others; trust can only be offered and accepted."[138] Following this remark the establishment of trust relies on the insight of both parties that mutual trust is highly beneficial in the long run and that exploitation is also punished and has severe drawbacks in the long run, as the reputation of the company deteriorates and unnecessarily complicates all its future business transactions. In conclusion, trust is not necessary, but very beneficial to any social exchange. The main economic mechanism in supporting the formation of trust is reputation. The existence of trust in a market efficiently reduces uncertainty and thus transaction costs. In Section 7.2.2 this point is taken up to show how reputation can also be used for the implementation of economic ethics.

6.2.6 Responsibility, generosity and public good games

The final moral virtue to be discussed with reference to behavioural economics is responsibility. This subject can be approached from an individual or social perspective. With some interpretation, the roots of responsibility as perceived today can be found in Aristotle.[139] He ties it to the necessity of good actions and thus envisions the individual idea of having responsibility. Still, the current notion extends to collective responsibility and thus considers individual responsibility within an institutional setting.[140]

So far, responsibility has been a dimension which is not captured by standard economic models.[141] But again behavioural economics has remedied this shortcoming, as already discussed in Chapter 3, with theories of cooperation and evidence on contributions in public good games. In public good games many humans exhibit responsible behaviour by taking individual risks for the common good. In these games contributions are typically above the risk-neutral Nash equilibrium, which means that most individuals in the group are aware of their

responsibility towards the group.[142] More specifically, Charness and Jackson can experimentally show that about 33 per cent of their population employs less risky strategies in the stag hunt game,[143] when deciding for a group rather than for oneself.[144] This behavioural evidence for voluntarily taking responsibility confirms responsibility is not only a normative virtue, but also an empirical fact.

The most popular economic argument against this conception of responsibility is the business theory of shareholder value orientation. Thereafter a company's management solely acts as an agent of the company's shareholders with the single task of maximising the company's financial value and abstaining from all moral value considerations.[145] This account resolves an objection often made to corporate social responsibility, namely, that managers are not legally allowed to spend the shareholder's money on non-company interests.[146] After all, not all shareholders are rich.[147] Every one of them invests his money in the expectation of an adequate return, without expecting managers to decide to contribute some of the shareholder's money to the community. Technically, this decision should be left to the investor and his or her rightful profits. However, most current views on responsibility employ stakeholder theory to account for a wider range of actors being affected by business decisions and having a legitimate concern in its activities. On these grounds, the efforts of corporate responsibility aim at creating a corporate conscience and thus to humanise the firm in order to find grounds for making it an ethical player.[148] This view of cooperative behaviour among citizens, government and businesses is based on the implicit assumption that all three groups share certain common interests, e.g. from a philosophical stance, the promotion of human well-being or, from a business stance, the promotion of society. But the variety of interest groups yields a practical problem for the conception of responsibility. An empirical analysis regarding the importance of the three main groups of investors, employees and community has revealed that the weight put on decisions for the community is just 14 per cent. Investors (53 per cent) and employees (33 per cent) have a far greater influence on a company's decisions.[149] Therefore, even though the different groups might have a common interest, they are characterised by very different opportunities for actively influencing business behaviour. Current views of corporate social responsibility with regard to stakeholder theory fail to discuss this matter adequately. They ignore the problem and always treat the different groups with equal rights instead of weighing their objectives according to their real influence. In addition, business theories have the deficiency of just maximising utility on a singular level. They do not account for an aggregation of the common benefit leading to the public good. Therefore this lack needs to be remedied with the conception of corporate social responsibility, combining individual responsibility and social welfare with the goods and values businesses can provide. In order to comply with both responsibilities, companies ultimately have to "balance competitive pressure with community needs".[150]

The essential justification of all corporate social responsibility approaches is to maintain that the interests of society and business are monotonously related.[151] This means to overcome the dilemma of profits and moral behaviour dialec-

tically. According to this view, the promotion of social interests is positively linked to the benefit of companies and vice versa. So Rodgers and Gago argue, that: "corporations could earn higher profits if they were good citizens of the community".[152] Thus ethical behaviour would be tantamount to Friedman's postulation for maximising profits. Some research already corroborates this view of profit and responsibility going hand in hand.[153] And it is often argued that socially responsible behaviour is at the very least an important lever to increase profits in the long term.[154] Thus responsibility can also amplify the impact of trust, the previous virtue in this discussion. Altogether, stakeholder theory has superseded shareholder theory and is currently the prevailing view in business. It can easily establish an interest in responsibility based on the balance of interests between all groups. On this account profit it just one end in a complex equation. Therefore profit without responsibility would be unacceptable, responsibility without profit infeasible. Hence responsibility is another cardinal virtue of modern virtue-based business ethics.

6.3 Modern virtues of business ethics based on behavioural economics

After having shown how the key virtues in this book relate to various concepts from behavioural economics, the following section proceeds by recapitulating the remaining business- and ethics-relevant virtues. Then the validity of these virtues and the scope of their application are discussed. Finally, the main benefits for using this set of virtues are highlighted.

6.3.1 Cardinal virtues of modern business ethics

According to Kant, human beings are never purely moral.[155] Therefore integrating virtues into business ethics, which do not conflict with economic laws, is a powerful device to support the natural human propensity to morality. In fact, developing a set of core values is one of the most central determinants of successful business operations.[156] Therefore I recapitulate the previously discussed six virtues of business ethics and in doing so assess their relations to neoclassical and behavioural economics. Thus I also evaluate their suitability for business ethics in accordance with economic theory (see the overview in Table 6.2).

The first cardinal virtue of courage was found to conflict with behavioural theories on human risk attitudes. Courage would translate into the concept of risk-proclivity, whereas in fact human beings are risk-neutral according to neoclassical economics or even risk-averse with regard to behavioural economics. As a result this virtue is not suitable to modern business ethics. Second, the cardinal virtue of temperance also does not go along with economic laws. The problem lies in the fact that self-control is shown to be impossible in standard experiments. This also relates to the behavioural economics theory of intertemporal discounting. Third, prudence is scrutinised. This virtue can be updated in terms of bounded rationality and then serves as a cardinal virtue to business

Table 6.2 Virtues and their suitability for business ethics

Virtue	*Behavioural economics concepts*	*Suitability to business ethics*
1 Courage	• Risk attitudes	✗
2 Temperance	• Intertemporal discounting • Self-control	✗
3 Prudence	• Bounded rationality	✓
4 Justice	• Social preferences • Outcome fairness • Procedural fairness	✓
5 Trust	• Repeated games	✓
6 Responsibility	• Public good games	✓

ethics. Fourth, justice, as the most central of the ancient cardinal virtues, can be resurrected by behavioural theories such as social preference models. Hence it, also, remains a central virtue to business ethics. Then after having analysed the classical cardinal virtues, the discussion had elicited trust as another possible virtue. Based on reciprocal strategies such as tit-for-tat and transaction cost reductions it follows economic mechanisms and can even enhance their beneficial impact. In fact, trust as a virtue of modern business ethics can even help resolving the fundamental dilemma of incomplete contracts. Similarly, responsibility is a final candidate. In its individual form it can be retraced in public good games. Moreover, adding the social dimension, it is the foundation for the conception of corporate social responsibility which itself is in line with stakeholder theory. Thus responsibility is also a necessary virtue of modern business ethics.

In conclusion, it can be said that the ancient virtues of courage and temperance as individually focused have made way for more open and social virtues, i.e. trust and responsibility. This might be due to the change from war as normality to a time of peace and commercial collaboration.[157] It is also a logical consequence of the globalised economy, which puts more emphasis on the social dimension.[158] This trend can also be found in the rise of behavioural economics, i.e. models of social preferences instead of individual utility functions. Overall, prudence, justice, trust and responsibility are identified as the new cardinal virtues of modern business ethics.

6.3.2 Validity of virtue-based business ethics

A challenge often made to value or virtue ethics in general is that it is a moot point to discuss and identify individual values, as they are always dependent on a certain period of history and a set of additional contingencies. In order to rebut this reproach and establish the general validity of values in business ethics, this section argues that the business ethics values as presented here can be taken as

consistent and constant. For their constancy and universality the existence of temporal and cultural contingencies has to be refuted.

Regarding the *temporal contingency* of values, Vogel asserts that: "in many important respects, the ethical standards to which one holds business accountable have remained remarkably constant over a relatively long period of time; though obviously many of the specific aspects of business conduct that trouble us are new."[159] The latter clause gets us to the point that business itself is susceptible to continuous change, but the underlying values are widely stable since the establishment of commerce. This has already been corroborated by an empirical study in the UK conducted by Oliver. He has proven that, even over the rapidly changing last three decades, there has been no significant change of the personal values individual managers hold and espouse.[160] Consequently, they are not subject to significant change in the long term. However, this does not mean that all companies have also written the same values into their codes of conduct. As a consequence, different businesses might have different values due to a difference in size, country or industry.[161]

In addition to the business characteristics, *cultural contingencies* are important and must be respected. This is especially important for global businesses. Nevertheless, there are some minimal, fundamental values, which hold for all cultures and every human.[162] With regard to social preferences this has been proven by means of the intercultural ultimatum game, where the literature finds broad consensus about just distribution across cultures.[163] Furthermore, the consequences of ignoring business ethics values are global in their effects such as environmental damage, exhaustion of natural resources and abuse of power.[164] Therefore at some point, environmental concerns naturally offset all arguments of limited national scope of business ethics. As effects on the environment are easily spread and amplified over the whole planet, it is a concern for every nation and every business.[165] Accordingly, it can also be assumed that the business ethics virtues as advocated here are sufficiently minimal and broad enough to be accepted by all businesses, no matter what characteristics they have or to which culture they belong. Another approach to increase the acceptance and compliance of business values can be found in some recent works on business ethics. They aim at blending a system of values with consequentialist and deontological theories in order to expand their generality.[166] By definition, the virtue-based account is based on individual decision-making capabilities rather than actual decision-making procedures. Hence the problems of situation-specific decision making are evaded, as long as the business virtues can be anchored in the persons in charge of deciding and by providing them with the right dispositions to moral decisions. Here, Donaldson argues that some contextual parameters are even necessary, giving the manager enough scope for adjusting his or her judgement of right and wrong.[167]

Moreover, to be respected in the sphere of business, virtue-based business ethics has to correspond with business theories, e.g. the cost-benefit calculus.[168] This focusis on a profit-driven perspective where the utility derived from certain actions is the only relevant outcome. A meta-analysis of studies of the relation

between corporate social responsibility and corporate financial performance has shown that currently 63 per cent of surveys indicate a significant positive correlation between the two measures.[169] Hence the profits of responsible behaviour already exceed its cost. Consequently, a full account of benefits must integrate more positive outcomes than profits. In fact, it must even incorporate the advantageousness of morality. Moreover, transaction cost theory has already been consulted to illustrate the benefits of trust. Its analysis has proven that moral behaviour often amplifies efficiency in business practice.

In conclusion, the case has been made for reconciling the standard business rationale with moral interests founded on the ancient tradition of virtue ethics. Accordingly, living a virtuous life and thereby also respecting some basic elements of behavioural economics is more important and natural to humans than only monotonously maximising business profits. With reference to behavioural economics, the priority of virtue is not only a normative claim, but also empirically grounded and thus compatible to current theories of business.

7 Implementing economic ethics and business ethics

We have, in fact, two kinds of morality side by side: one which we preach but do not practice, and another which we practice but seldom preach.

(Bertrand Russell)

Building on the discussion from the previous chapters the implementation of economic ethics and business ethics needs to be addressed. For both realms, existing theories are discussed against the background of behavioural economics and also potential theoretic extensions are sketched. This chapter starts off with a short section depicting a general framework for the implementation of economic ethics and business ethics and its relation to economics. The main part however unfolds in two symmetric sections. Section 7.2 deals with the implementation of economic ethics focusing on the institutional level then Section 7.3 covers the field of business ethics with an organisational focus.

7.1 A framework for implementing economic ethics and business ethics

Before coming to the various interrelations of ethics and behavioural economics regarding implementation and design, the normative foundation of economic ethics and business ethics is re-emphasised. Based on this, a general framework for the structured discussion is derived and main means of implementation are related to the literature on order ethics. Finally, some prerequisites for implementing economic ethics and business ethics are explicated.

First of all, it is necessary to remember the discussion of the normative-empirical relationship in ethics. So as already argued the normative foundation must not be weakened by any means. Moral norms are the central starting point for both economic and business ethics. For example, they can serve as institutions to facilitate and enhance cooperation.[1] More generally, they impose constraints on any economic interaction,[2] for most economic agents have some respect for values and norms, so that they are always bound to the omission of some immoral or illegal behavioural patterns. Nevertheless, it is important to keep in mind that business ethics must serve as an applied ethics.[3] So every

normative demand relies on the human capability to act accordingly. This is the fundamental ethical principle of "ought implies can" again. As Sterba puts it: "people are not morally required to do what they lack the power to do or what would involve so great a sacrifice that it would be unreasonable to ask them to perform such an action".[4] Hence any account of applied ethics must also incorporate the empirical and theoretical necessities of its field; here these are economic laws and experimental evidence on economic agency. Thus the methodological focus pursues the importance of behavioural economics as the counterpart for business and economic ethics. This approach is indirectly supported by Buchanan who highlights that: "attempts must be made to modify the institutions (legal, political, social, economic) with the objective of matching these more closely with the empirical realities of man's moral limitations."[5] Also, order ethics argues that the issue of implementation must be a central aspect to any theory of applied ethics such as economic ethics.[6] Moreover, applied ethics cannot only discuss the rightness of normative theories it must also envision its implementation. For the implementation of moral norms there are various options e.g. rules and contracts, incentives, economic mechanisms or moral virtues, which are mapped to business ethics and economic ethics in the following. Summing up the behavioural economics findings from the previous chapters, a hierarchy of means for implementation can be derived according to their intensity. This is sketched in descending order in Figure 7.1.

Self-interest is the motivational source most natural to economics and thus the most powerful and convincing means for implementation. Then incentives are an only marginally weaker means, still appealing to self-interest, which is the main foundation for the economic layer of order ethics. Reciprocity, trust and fairness as extensively examined in Chapters 3, 4 and 5 take a middle ground. This is still suitable for the implementation of economic ethics and business ethics, as the success of this mechanism is backed up with experimental evidence and does not necessitate a direct link to self-interest. Finally, altruism is the weakest means for implementation. Since it is not integral to behavioural economics, it is rendered at least unsuitable for economic ethics. Therefore, all means of implementation except altruism are considered auspicious and are thus pursued throughout this chapter.

Again, the implementation of institutions aligned to economic and business ethics cannot be discussed from a purely philosophical perspective. In fact it must also consider economic theory.[7] Hence I use the following sections to discuss some important topics in behavioural economics which also have a strong moral component, e.g. fostering financial trust and improving savings plans or the rationale of corporate social responsibility. These discussions relate the moral issues with insights from behavioural economics and pinpoint possible

Figure 7.1 Means for the implementation of economic and business ethics.

solutions. In order to expand on the central role of moral norms, I will give a short discussion of how economic ethics and business ethics rely on norms and how they ascend from norms to implementation. For this purpose the framework depicted in Table 7.1 demarcates the implementation of business ethics and economic ethics. Moreover, it serves as guidance for the remainder of this chapter.

A lot of these implementation measures have already been discussed in order ethics. Rules are the central mechanism in order ethics.[8] Efficiency, especially understood as Pareto-efficiency is its central decision criterion.[9] However, transparency is a new concept derived from behavioural economics, which has not yet been discussed within order ethics. Incomplete contracts in turn are one of the starting points of order ethics.[10] Similarly, reputation based on trust and incentives are integral to this theory.[11] Nevertheless, with regard to incentives a new asymmetry between rewards and punishments can be introduced with behavioural economics. Corporate social responsibility has always been in the focus of applying order ethics.[12] Finally, bounded rationality as a means for implementation and corporate value codes have not been discussed in order ethics so far. Therefore the remainder of Chapter 7 has two main objectives. First, it re-establishes some fundamental concepts of order ethics on behavioural grounds. This helps both in reinforcing its economic underpinning and specifying the exact functioning of the underlying behavioural mechanisms for economic agency. And second, it extends the current scope of implementation in order ethics with some new concepts, such as transparency, the asymmetry of rewards and punishments, bounded rationality and corporate value codes. Before starting to discuss the implementation in Sections 7.2 and 7.3, I elaborate on the most important elements of this framework. Here again economic ethics focuses on the market level, whereas business ethics is restricted to the organisational and individual level.

Table 7.1 Implementation framework for economic and business ethics

	Economic ethics	*Business ethics*	*Relation to order ethics*
Market level	• Rules and governance		✓
	• Efficiency		✓
	• Transparency		Extension
Institutional level	• Incomplete contracts		✓
	• Reputation		✓
	• Incentives		✓
Organisational level		• Corporate social responsibility	✓
Individual level		• Bounded rationality	Extension
Value and virtue level		• Corporate value codes	Extension

7.1.1 Implementing economic ethics

Successful implementation is a key objective for order ethics.[13] As already pointed out in Chapter 2, the conception of norms in order ethics has a two-fold notion. First of all, as in all ethical theories the norms have to be justified, so they can best be developed on the basis of dilemma structures such as the prisoner's dilemma, as already outlined.[14] And second, for economic ethics the foremost means to implementing moral norms are incentive compatible rules.[15] Rules are mechanisms, formalising or applying economic ethics to real world institutions. These rules must be formal. For as the structure of ancient societies was based on face-to-face relationships and face-to-face sanctioning mechanisms, modern societies are more anonymous and must be governed by more formal institutions.[16] Moreover, rules do not necessarily rely on external sanctions. Internalisation of the respective norms can already be very efficient.[17] Nevertheless, rules always imply an inherent punishment option. Along these lines, order ethics can also conceive rules as directives with some sanctioning mechanism. Thus they give positive rights for conducting some economic actions and sanction some other behaviour as immoral.[18] This structure roughly corresponds with the asymmetry of rewards and punishment, which is often found in the behavioural economics literature. In general, governments are the central institution in order to determine and enforce rules.[19] Finding the perfect balance between market freedom and governmental regulation is probably the foremost question of political economics.[20] But a comprehensive discussion would be beyond the scope of this book. Nevertheless, analysing and designing individual rules leads us to a range of mechanisms currently discussed within economics. Here the main alternatives are: specific markets; auctions; negotiations; cake-cutting mechanisms; and contracts. On this basis, the literature on mechanism design is particularly useful, as it systematically studies the various available economic mechanisms and puts an additional focus on their incentive compatible embodiment. And in order to implement economic ethics, actions have to be incentive compatible, more precisely they have to be founded by mutual advantages.[21] Hume established this necessity of win-win situations stating: "what theory of morals can ever serve any useful purpose, unless it can show, by a particular detail, that all the duties which it recommends, are also the true interest of each individual."[22] Following this heritage, Homann and Lütge demand a search for Pareto-superior changes of rules. They claim that only Pareto-superior changes of rules can be implemented, as they are compelling by means of their win-win character.[23] This approach follows Buchanan in agreeing on a set of rules that facilitates reciprocal gains.[24]

Having established the necessary condition of mutual advantages for the design of rules, I now move on to the design of the underlying incentive structures. In this regard, both rules and institutions are the most important ways of materialising incentives, as they are best accessible with economic mechanisms.[25] Hence order ethics also implicitly relies on incentive structures. In fact, it argues that moral governance of society can only be implemented by means of

incentive structures.[26] Accordingly, order ethics is primarily concerned with the governance of benefits and incentives. Rules and institutions are only the means to that end.[27] That means a combination of rules and incentives as suitable mechanisms for governing a globalised economy and is not meant to make any anthropological claims.[28] Generally, for all approaches focusing on the right incentives to induce economically and morally desirable actions, it needs to be pointed out that individuals respond not only to expected pay-offs but also to non-monetary expectations.[29] Moreover, behavioural economics research states that punishment is another key factor to govern norm enforcement.[30] Punishment or only the opportunity for retaliation can serve as a powerful negative incentive. So coming back to the problem of cooperation from Chapter 3, the experimental evidence shows that contributions in public good games are significantly higher if there is a punishment option. In this regard people even willingly make sacrifices just to seize the opportunity for punishing defectors of a social norm.[31] However, in contrast to punishment, the current account of order ethics does not explicitly utilise rewards as a norm-enforcing mechanism. This opportunity is discussed in more detail in Section 7.3. As an upshot the implementation of incentives in the form of rules and institutions ultimately aims at human behaviour in economic contexts, which again brings us back to behavioural economics as the appropriate design science.[32]

In conclusion, Boulding has once asserted that economic mechanisms had by then been dominating morality.[33] Now economic ethics and behavioural economics are combined to serve as a solid foundation for market morality. In this regard, rules and incomplete contracts have already been discussed in the works on order ethics and are only refined in the following. The extension of order ethics lies in the design of incentives, the change of rules according to mechanism design as well as in the incorporation of market virtues such as efficiency and transparency.

7.1.2 Implementing business ethics

After economic ethics, the implementation of business ethics is addressed. First of all, there are three general requirements for the implementation of business ethics, which are adopted for the scope of this book:[34]

1 Offer normative recommendations with an empirical foundation.
2 Formulate values which change behaviour.
3 Respect the relevant social, cultural and ecological environment.

The empirical foundation is provided with behavioural economics, i.e. experimental evidence. Value and virtues are explicitly discussed in Section 7.3.3, but they also indirectly account for the implementation mechanisms considered in Sections 7.3.1 and 7.3.2. The relevant environment is again implicitly examined with behavioural economics as the framework for all relevant parameters of society in an economic context. This also encompasses cultural and ecological

factors to some extent. Moreover, the implementation also draws from a game-theoretic perspective on cooperation as outlined in Chapter 3 and the understanding of preferences as social preferences.

Overall, three main themes of business ethics are discussed: corporate value codes; bounded rationality; and corporate social responsibility. First of all moral virtues are the most direct road to implementing business ethics, but at the same time they are the most abstract and hence delicate. Individual virtues are difficult to implement, because they may interfere with the economics of self-interest.[35] As the discussion in Chapter 6 has illustrated, virtues are still a contentious but popular topic in the business ethics literature. In this regard corporate value codes are the most important tool to confer virtues in the sphere of organisational and individual management. Hence the discussion in the business ethics literature is related to the findings from Chapter 6 and the potential of the corporate values approach is assessed from the perspective of behavioural economics. Second, for this book, bounded rationality foremostly means bearing in mind the bounded rationality of human beings and their propensity to social preferences. Based on this behavioural aspect, the discussion exemplarily focuses on savings plans which can be improved by exploiting bounded rationality in the interest of the individual investor. This also ties in with the theory of libertarian paternalism as currently discussed in political philosophy. Finally, corporate social responsibility takes up the virtue of responsibility from Chapter 6, but applies it to the organisational rather than the individual level, which is still within the scope of business ethics. This highlights the cardinal importance of responsibility for the governance of business transactions. This discussion is also related to the currently strongly debated concept of corporate governance, which brings together theories from management, economics and recently also behavioural economics.

7.2 Implementing economic ethics on the basis of behavioural economics

The following section gives an overview of potential mechanisms for order ethics and their economic implications for the implementation of economic ethics. Therefore the general interplay of institutions, rules and incentives is analysed. This analysis starts with some elementary considerations about efficiency and transparency in markets. Then incomplete contracts are reconsidered. Also reputation and incentives as additional economic forces are integrated in the institutional framework. Even though incentives have already been fundamental to order ethics, the asymmetry of positive and negative incentives is a new direction for the advancement of order ethics. Finally, corporate citizenship as a new organisational approach to order ethics is briefly considered.

7.2.1 The market as a meta-institution: efficiency and transparency

I begin with the treatise of institutions from the point of behavioural economics and order ethics. This first part aims at establishing the market as a meta-institution

for economic ethics. Therefore two key features of markets, i.e. efficiency and transparency, are outlined. Efficiency is an economic rationale, which cannot be circumvented by economic ethics, and transparency is a factor gaining increasing importance in behavioural economics, but so far only little attention in order ethics.

Meta-institution, institutions and mechanisms

First of all, it is important to derive a clear notion of institutions, which is founded on economic theory but also suitable to economic ethics. In the economics literature, there is no sharp distinction between institutions and mechanisms. In fact, both terms are usually used interchangeably. Nevertheless, for the scope of this book I try to give a more precise distinction by considering both concepts more closely.

Markets are the basic "mechanism" or vehicle for governing the exchange of goods and services. Due to their worldwide popularity, with almost infinite application and thorough theoretical understanding, they can be conceived as the most basic institution and thus as the meta-institution for all economic transactions. This notion of markets and how they relate to some other economically relevant institutions is depicted in Figure 7.2.[36] Markets are evidently the most popular mechanism for distributing or exchanging goods. They have a long historical tradition and neither practice nor theory seems to even vaguely envision any alternative, in terms of efficiency, simplicity and robustness.[37]

Coming from the meta-institution to a broad understanding of common institutions it has been pointed out that they "serve as tools that reinforce, even induce, individual rationality."[38] By means of their clear design, rule-based functioning and focus on pooled rather than individual rationality, institutions behave more rationally than individuals. So the empirical adequacy of full rationality, as discussed in Chapter 4, is more troubling for individual decision makers than it is for institutions. The most common institutions within the sphere of markets are for example auctions, negotiations, incomplete contracts, and fixed prices. When to apply which of these institutions depends on a variety of parameters characterising the business partners and the transaction at hand. Moreover, the choice and design of a particular institution can have important forbearing on the fairness it induces when implemented.[39] In this regard the views on institutional

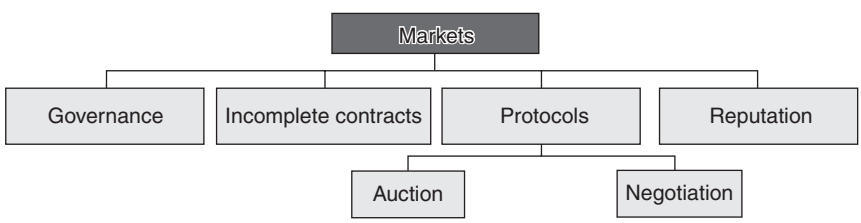

Figure 7.2 Markets as a meta-institution.

design smoothly tie in with the insights from Section 5.2. Finally, relating these concepts to order ethics, comparing the various economic institutions and thus finding the most suitable for economic ethics, based on solid theoretical deliberation, might be an important question guiding future research. So the primary objective is to change the rules, as for example in the prisoner's dilemma, to facilitate cooperation as a new equilibrium. In this regard, it needs to be stressed that the design of new rules and institutions must go hand in hand. For, without some external enforcement institution new rules remain ineffective.[40] Rules always necessitate a superior governing and regulating body. Accordingly, individuals are ruled by organisations and laws, organisations are ruled by states and laws, states are ruled by international laws. Moreover, in every institutional design, incentives for moral and immoral behaviour typically coexist. Unfortunately, many empirical studies prove that incentives for immoral behaviour always increase such behaviour at least to some extent.[41] Hence it is even more important to minimise the immoral incentives in order to facilitate rational moral behaviour. In addition, it is important to bear in mind that only few actors can dominate a market. For example, in a basic model of price competition it only needs two players to set prices at marginal cost. It is sufficient if two competitors successively undercut their prices to force all other market participants in this industry to follow their pricing.[42] This conduct condenses to the essential problem of follower behaviour. For example, in a market where someone is immoral or seems to behave immorally, but in a profitable manner, rationality and self-interest demand everyone else to share this immoral behavioural pattern. The only resolution to this problem is to design incentives in a manner where every immoral behaviour is also rendered irrational. Here transparency might be a very fruitful approach for the design of rules and regulatory frameworks, inhibiting and stigmatising any immoral market interaction. The example of tax evasion proves that public information about immoral behaviour is a very powerful means for increasing discipline. So many people are comfortable with secretly evading taxes, but almost nobody is comfortable when his misconduct becomes transparent.

Next, I consider the notion of economic mechanisms and try to distinguish them from institutions. The theory of mechanism design was first introduced by Hurwicz and is a cornerstone of today's microeconomic theory.[43] Accordingly, a mechanism is formally defined as a system for communication to enable the market participants to conduct some coordination.[44] This definition confirms that, strictly speaking, mechanisms are subordinated to markets. Nevertheless, the exact demarcation remains fuzzy as mechanisms rely on an implementation via institutions. However, this grasp of the concept of mechanism shall suffice for the following and I move on to establish an important relationship to order ethics, i.e. incentive compatibility. So the basic principle of mechanism design is the concept of incentive compatibility.[45] It is yet another concept trying to induce and control individual rationality in economic interactions. More importantly, it is a fundamental economic approach for aligning individual and social interest. Consequentially, incentive compatibility is one of the key demands of order

ethics regarding any change in governance. From the economic perspective incentive compatibility is defined as a set of mechanisms, according to which everyone maximises his utility by truthfully revealing all private information.[46] The most popular example for such a mechanism is probably the Vickrey auction, as for example used on the internet platform eBay.[47] The first adoption of mechanism design ideas, i.e. incentive compatibility, to ethics can be found in Binmore's work on social contract theory.[48] But, currently there are increasing challenges for the robustness of mechanisms. This has called the attention of behavioural economics to mechanism design.[49] Based on the essentially game theoretic analysis as the foundation of mechanism design theory, behavioural economics adds experimental methods and social insights to test and improve the functioning of mechanisms in real-world scenarios. For example, the evolutionary tournament for strategies in the repeated prisoner's dilemma shows how important the robustness is for a successful implementation. A lot of strategies in the tournament or rules in the implementation of economic ethics might be good in the short run, but robustness can only be ensured by long-term success. So it can be shown that also the tit-for-tat strategy is only robust when mixed with other strategies.[50] With regard to order ethics this helps to stabilise the rules founded on mechanism design analysis. Altogether, order ethics must be aware of the problem that short-term and long-term success of a strategy can be very different. And one way of improving the critical long-term success is using mixed strategies, which only emphasises the respective point regarding the extension of order ethics as already made in Chapter 3.

Market level vs. individual level

As already argued in Section 7.1 there are various levels of implementing ethics within business and economics. Nevertheless, the social proximity differs between these levels and thus different factors dominate. For the sake of simplicity I will try to illustrate these differences for the market and individual level, relating behavioural insights to the group size. So game theoretic predictions and experimental evidence on public goods games corroborate that both increasing incentives and decreasing group size improves the level of voluntary contributions and thus efficiency.[51] For contributions to public goods it is argued that small groups are more efficient, as here the social processes can dominate the anonymity effects.[52] This shows that morality is more natural to small group sizes and thus easier to implement on a small scale. In general, there is a crucial impact of group size on social processes and especially on decision making.[53] Accordingly, the cost of decision making increases with group size.[54] These differences based on group size conflict with common assumptions of game theory and neoclassical economics, where the process of rational decision making should not depend on size. But from a design perspective, one can note that pooling opinions, instead of relying on individual decision making only, can even induce morality in economic settings.

Market efficiency and transparency

Before the details of incentive structures in economic ethics can be discussed, a short discussion of markets as the central economic institution is deemed necessary. This focuses on the two market features of efficiency and transparency. Markets are the basis for allocating goods. Provided that they are efficient, they match goods with buyers, who have the highest valuation. The efficiency of financial market has most accurately been expounded with Fama's efficient market hypothesis.[55] This follows a simple line of falsificatory argument. If there were only semi-efficient markets, some investors would have some informational advantage and would rationally exploit this advantage for arbitrage. But then after arbitrage the market prices would be in equilibrium and there would be no more opportunity for arbitrage. So as there is no long-term or mid-term opportunity for arbitrage, market prices must always reflect full information. Along these lines, it has been argued since Hayek that competitive markets are the best mechanism to aggregate asymmetrically distributed information.[56] This point leads to the conclusion that there is not any sensible discussion of profits in a market, since it is only an efficient information aggregation mechanism which does not discern right and wrong.[57] However, recent research in behavioural economics questions this argument of fully rational markets which perfectly process all available information.[58]

This brings us to the relation of markets and morality. Here, typically, a conflict is assumed, which must be resolved. One radically different approach claims that "morality is a potential solution to the problem of market failure."[59] Such an account would overrule economic mechanisms and behavioural regularities with normative demands. Regarding all the previous considerations in this book, such an approach seems a very unrealistic implementation strategy. Another response to the tension of markets and morality focuses on the efficiency conception. Along these lines, the ethical implications of markets and their efficiency are prominently discussed by Buchanan.[60] More recently, the notion of efficiency is reconsidered, departing from the narrow notion of Pareto-efficiency and thus allowing for a wider notion based on happiness and other potentially relevant factors.[61] This approach gains increasing credit in the economics literature and it is also fully attuned to the behavioural underpinnings of economics as outlined in this book.

The second fundamental issue for markets after efficiency is transparency. The first theoretic pondering about transparency can be found in Plato's "ring of gyges".[62] There he contemplates a ring that makes the wearer invisible and with this metaphor he claims that no one is willingly just. As a consequence, everyone does somebody injustice, provided that no one else can observe or prove it. Therefore in order to observe and govern market behaviour, markets have to exhibit at least a minimum level of information. One can construct an evolutionary argument illustrating the basic problem, where market intransparency can be elicited by a game theoretic analysis. In intransparent markets the profits are higher, due to informational advantages the dealers in the opaque markets can

obtain by observing the transparent market. By contrast, the dealers in the transparent markets cannot analogously capture information from the less transparent market. Thus transparency is driven out of the market due to higher incentives for intransparent behaviour.[63] Whilst market efficiency does not require order ethics interference, market transparency poses an issue. Hence rules in order ethics must be implemented in a manner preventing as much intransparency as possible.

In conclusion, there is an important distinction between meta-institutions, institutions and mechanisms. For the scope of this book I assume the market being the only meta-institution. Moreover, the levels of institutions and mechanisms are central to economic ethics, even though their boundaries are still fuzzy. In the following, incomplete contracts, reputation and incentives remain the key institutions for policymaking in order ethics. Additionally, efficiency is a prerequisite for any implementation of order ethics. However, in addition to the classical Pareto-definition of efficiency there are alternative accounts emerging, which advocate a broader conception of efficiency and might be more attuned to order ethics in the long run. Finally, transparency is a prerequisite to implement perfectly fair markets. However, transparency is a concept, which has not been addressed in economic ethics and order ethics so far. Hence the underlying framework must be extended with transparency to guide an optimal implementation of institutions. Making market transactions more transparent could thus disburden incentives from being the sole force for governing behaviour. Along these lines, even slightly wrong incentives could still lead to moral behaviour, because transparency already ensures the right decisions.

7.2.2 Incomplete contracts and reputation

After having dwelt upon general market characteristics, some more basic institutions for economics are put into a moral perspective. First, incomplete contracts as a primary economic institution are assessed in terms of their scope for the implementation of order ethics. Second, based on the intrinsic limitations of contracts, a behavioural economics concept of reputation is developed. Reputation is already a concept grounded in the institutional economics foundation of order ethics, but nevertheless this section shows how the concept of reputation can also be derived from behavioural economics. Hence it offers a new perspective on reputation which can be adapted to economic ethics.

The moral potential of (incomplete) contracts

Coming from an economic perspective prone to order ethics, a first approach to business interaction would be to allow only for all contracted business. After all, one can assume that these cases are based on the mutual agreement of the contractors and within a legal framework. However, that would prevent a lot of desirable business interactions and thus be inefficient in the long run. Generally, the two main options for positively governing individual interactions are

contracts and trust. This section focuses on the use of contracts before moving on to trust.

As already argued, perfect contracting based on complete contracts is appealing from a normative perspective, but unrealistic from a behavioural perspective. Neither writing nor understanding nor monitoring complete contracts is conformable with bounded rationality and thus with basic human capabilities. Even more importantly, in real markets incomplete contracts are a fact and a lot of exchange relies on informal agreements. This fact constitutes severe incentive problems, which are also discussed in the following sections.[64] Nevertheless, the de facto standard in the literature are incomplete contracts which holds for both economics and economic ethics.[65] Here one can distinguish between formal contracts as usually used in the legal sphere or informal contracts, e.g. promises, relating to social contract theories, where the contract is just a metaphor for sealing an agreement. To get a better grip on the functioning of contracts, order ethics takes up the economic discipline of contract theory to formalise and govern economic interactions.[66] In this regard, reality is dominated by incomplete contracts, as it is typically impossible to specify procedures for all eventualities. Order ethics generally conceives incomplete contracts as a shortcoming which has to be compensated with appeal to fair behaviour.[67] So order ethics realises the conceptual problem that incomplete contracts convey. However, having a closer look at the respective economic underpinning, incomplete contracts must by no means be a problem. Looking at the economic literature on contract design, one realises that incomplete contracts can even be superior to complete ones.[68] This is not only the case on the basis of the costs involved with setting up and monitoring the contract, but also with the efficiency of the underlying incentive structure. Here the design of incentive structures is crucial. So sometimes it is very helpful to construe covenants to create negative incentives against malicious behaviour. Regarding the order ethics appeal to fair behaviour to evade the potential conceptual problems of incomplete contracts also relates to the discussion about economic fairness in Chapter 5. Here it was shown how fairness in behavioural economics as social preferences and procedural fairness provides an empirical basis for rationalising fair behaviour. Finally, with regard to experimental economics, "every contract on which rational players might agree in the presence of external enforcement is available as an equilibrium outcome in an infinitely repeated game."[69] This again shows the sufficiency of incomplete contracts to govern economic transactions.

In conclusion, the application of contracts has clear limitations. These become even more evident when put in the light of boundedly rational agents. Incomplete contracts can always constitute a partial or mutual problem of moral hazard. Based on this problem transactions become either inefficient or even impossible. However, order ethics points out that "morality understood as fairness, integrity, trust etc. has the task to absorb the uncertainty of incomplete contracts and thus to reduce the costs of interaction."[70] Dwelling on the economics literature it becomes obvious that many people choose trust over the usage of contracts.[71] By their very nature contracts are not appealing to the social prefer-

ences and empathy of people. Hence trust is the main topic for improving the implementation of business interactions in the next section.

Trust and reputation

In the following, I illustrate the importance of trust in markets as a means to facilitate efficient business transactions. Therefore it is shown how reputation can be used as a formal representation of trustworthiness. In doing so both its ethical tradition, as well as the economic foundations are outlined.

It is already well established that trust is a very efficient mechanism for reducing complexity and uncertainty, simplifying our everyday choices.[72] Moreover, trust is a key to every economic exchange, which was first formalised by Arrow.[73] It is a key success factor for all long-term relationships.[74] Empirical evidence confirms that higher levels of trust also yield higher earnings.[75] Since trust is a relevant factor in virtually all business transactions, reputation is a key element to the enforcement of economic institutions.[76] In his dialogue of "Criton", Plato pointed out the significance of reputation in a society.[77] There his notion of reputation is virtue based and relates to an individual's character. Similarly, Hume has stressed that "honesty is the best policy".[78] Accordingly, people should value and cultivate their own reputation for honesty.[79] Thus trust also relates to the cardinal business ethics virtue of honesty, as identified in Chapter 6. Contemporary theories concentrate on the behaviour of organisations, which are the typical social setting for businesses.[80] They define reputation as: "a synthesis of the opinions, perceptions and attitudes of an organisation's stakeholders including employees, customers, suppliers, investors and the community."[81] More practically, reputation can be defined as all available information about the general behaviour or trustworthiness of an economic agent. Also, order ethics stresses reputation as a prerequisite to modern business practice.[82] Moreover, exhibiting fair behaviour and acting in accordance with integrity fortifies the benefits of reputation.[83] In the following, the necessity of reputation is substantiated with additional evidence from behavioural economics. So in economics, reputation can serve as a mechanism for increasing efficiency when dealing with imperfect information.[84] And as a matter of fact, most economic transactions are subject to uncertainty, ambiguity and risk. Hence imperfect information is the standard paradigm for almost all behaviour in economic contexts.

Now the economic functioning of reputation, as a formal mechanism, is outlined based on some game theoretic considerations.[85] Here, game theory and behavioural economics can rationalise reputation building within an economic framework and without moral appeals. This makes the discussion of reputation on the basis of game theory a valuable source for improvement of order ethics. Overall, reputation can also alleviate the informational problems stemming from the use of incomplete contracts.[86] It is also shown that reputation can facilitate partnerships, which would not be possible otherwise.[87] Turning to the game theory of trust consider the following basic trust game as described in Table 7.2.

Table 7.2 Static trust game

		Player 2	
		Cooperate	*Defect*
Player 1	Cooperate	3; 3*	0; 2
	Defect	2; 0	1; 1*

This game has two Nash equilibriums, the first is (cooperate; cooperate) and the second (defect; defect). Mutual cooperation is implicitly the only Pareto-efficient outcome, but mutual defection is the risk-dominant equilibrium. So this game can also be interpreted as a special form of prisoner's dilemma and has the same equilibrium structure as the stag hunt game already discussed in Chapter 3. More important for actual market transactions are the dynamics of trust. Therefore consider the trust game in Figure 7.3, illustrating the essence of e-commerce and integrating the temporal structure of dynamic game play.[88] E-commerce is a useful device for the discussion, as it is essentially based on one-shot interactions.[89] As a starting point, this simplifies the main line of argument. In the game illustrated in Figure 7.3, the buyer has to make the first decision which is either buying a good or not buying it. In the following stage, given that the buyer has decided to make a purchase, the seller can decide whether to ship or not ship the good. On anonymous and international markets with difficult or unclear legal frameworks, this creates strong economic incentives for the seller not to ship.

In this game, and based on the rational choice paradigm, not shipping yields the highest seller pay-off, leaving the buyer no pay-off at all. Hence without reputation the first stage decision "don't buy" and not being dependent on the seller's decision is the only subgame perfect equilibrium. Like in the prisoner's dilemma, the equilibrium is Pareto-inferior to the (buy, ship) transaction. As a consequence it is sometimes argued that in finite games the players must be intrinsically trustworthy to some degree in order to facilitate cooperation.[90] Another possibility would be to claim that agents are motivated by some utility

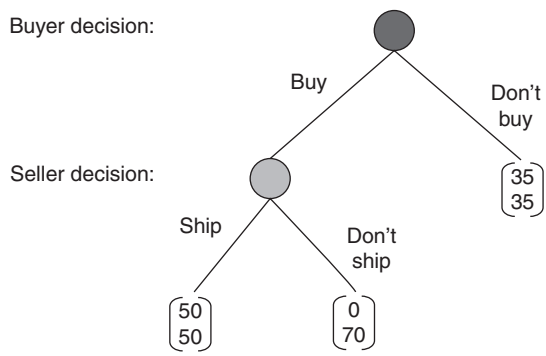

Figure 7.3 Dynamic trust game.

function based on social preferences, which induces fair behaviour resolving the inefficient equilibrium. A third way to evade the inefficiency dilemma would be to assume that many transactions are actually repeated encounters. But even following this line necessitates an interpretation of real-world trust games as an infinitely repeated game in order to find game-theoretic equilibriums which are Pareto-efficient. Another prima facie solution would be to allow for pre-play communication to give the actors a possibility of mutually signalling their good intentions. Unfortunately, such an approach is not tenable based on purely game-theoretic considerations, where every non-binding communication is rendered cheap talk.[91] Finally, without relying on long-term reputation, experiments based on evolutionary game theory show how to sustain cooperation in prisoner's dilemma situations. So whenever trustworthy type players are matched with like-minded players, high levels of Pareto-efficient cooperation emerge.[92] However, such a solution based on a perfect matching of a particular type of players cannot be a universal solution. So as intrinsic trustworthiness, social preferences, repeated encounters, pre-play communication and type matching are not the optimal solution, reputation is considered more closely from a game-theoretic and behavioural perspective.

First of all, when analysing trust games there is different evidence for playing in fixed pairs or in a strangers matching. The evolution of trust is natural for fixed pairs, whereas there emerges no trust and no efficient trade when the transaction partners are rematched after every one-shot encounter. This stresses the intuition that reputation could be the driving force in such games. And considering the experimental evidence, one finds that trustworthy behaviour can be driven to similar levels in both matching scenarios, if one provides a transaction history, i.e. reputation information for the strangers setting.[93] Hence building reputation on the grounds of feedback is a very efficient mechanism.[94] In order to substantiate the idea of reputation, reconsider the problem of cheap talk. Here the central issue in the play of dynamic games is the credibility of players.[95] This problem can partly be resolved by signalling one's intentions at some cost. Accordingly, signalling is a basic mechanism for building reputation.[96] However, the problem with signalling is that it still relies on perfect information structures, as already described in Chapter 2. For games with imperfect information, signalling is difficult to realise and thus formal reputation mechanisms or reputation systems become necessary. The reputation mechanism is basically a case of strategic reciprocity based on the assumption of repeated interactions.[97] Focusing on the player's intentions and accounting for reciprocity was proven to successfully predict behaviour in two-person trust games.[98] With the possibility of building reputation, external sanction mechanisms are not necessary to rationalise cooperative behaviour.[99] In a nutshell, reputation systems are designed to incorporate elements of traditional market into electronic market platforms. For example, they try to find digital replacements for word of mouth recommendations.[100] Thus such "cleverly designed institutions can create strategic incentives to be trustworthy even for selfish and rational sellers."[101] This is the key benefit of reputation integrated in the market order. Hence reputation should also play a

pivotal role in order ethics. Furthermore, behavioural economics supports the importance of reputation. For example, it can be argued that exchanging promises and establishing trust in economic exchanges is motivated by a natural social preference for promise keeping.[102] As already argued, this cannot be the sole source of improvement, but it is a valuable supplement to the game-theoretic rationale. In addition, the behavioural literature stresses the dangers of deception, as deceiving others erodes the basis for mutual trust and efficiency.[103] Here it is shown that there is a conscious process of weighing off the consequences of deception. So people do not only consider their personal gains from a lie, they also consider the harmful consequences of their lie to others.[104] Employing behavioural economics, reputation also affects the notion of rationality. Taking reputation into account it can be best not to optimise in the short-term in order to please others, but to optimise another long-term objective.[105] Hence within the framework of repeated interactions and the opportunity to build reputation, decisions and behaviour can become more sustainable, as the relevant time horizon for rational decision making expands. Finally, the role of communication has been neglected by both economics and economic ethics. However, communication can serve as a behavioural complement, increasing trust and trustworthiness.[106] Removing anonymity and allowing for communicative interaction increases cooperation in dilemma situations. Thus communication is another central issue to improve cooperation, as it triggers and reinforces people's social preferences.[107] Analogously, other experiments show that higher social proximity increases trust, trustworthiness and contributions in bargaining games.[108]

In conclusion, reputation is an enhancement to the implementation of order ethics. It does not rely on fully specified incentive schemes or contracts but rather allows for integrating long-term objectives and natural moral instincts to spread out in a market environment. Nevertheless, by design of reputation this foundation for market morality can be fostered and actively governed, for example by strengthening the underlying reciprocity mechanism and also by making market behaviour more transparent as already advocated in the previous section.

7.2.3 Monetary incentives, monetary punishment and social incentives

Now I can turn attention towards the connection of incentives and rules in order ethics. First of all, order ethics has an open conception of incentives. These can be money, time, effort, satisfaction or something else.[109] Homann and Lütge stress that any economic ethics depends on rules which can be implemented by means of incentives.[110] After all, from the perspective of principal agent theory, if contracts cannot be fully enforced they have to be designed in accordance with incentive compatible constraints.[111] Hence, in order ethics, rules are the most important vehicle to convey incentives in a market. There the rules are typically governmental regulation. In the following, I distinguish between three kinds of

incentives. First, monetary incentives; second, costly punishment; and finally, the more behaviourally based social incentives. From the behavioural point of view adopted in this book, all are necessary to develop optimal incentive schemes for the implementation of order ethics.

Monetary incentives as the foundation of order ethics

Monetary incentives are in line with the neoclassical theory of economics and basically realise the insights from mechanism design theory, as presented in the previous section. The two most fundamental and researched areas for their functioning are compensation schemes in organisations and the profit of organisations earned for its shareholders.

In organisations, compensation schemes are the main instance for implementing monetary incentives.[112] Here promotion-based incentive systems are by far the most popular arrangement in businesses.[113] Another complementary approach is the horizontal equity system which pays all employees on the same level alike.[114] This effectively combines the two distributive principles of equity and merit, as already discussed in Chapter 5. The rationale of monetary incentives has experienced a peak with the analysis of the 2008 financial crisis and the compensation paid to investment bankers, which is commonly believed to have focused too much on the short run. However, this insight is not new to the academic literature.[115] There are a few problems inherent to providing monetary incentives based on performance. First of all, for most jobs an objective measurement of incentives is very difficult, if not impossible. Subjective measurements as an alternative are problematic, as they can be manipulated, and superiors in general are reluctant to discriminate between their "inferiors".[116] So instead of rating their employees, managers tend to give everyone the same rating. This behaviour, which compromises the success of performance evaluations, is also known as the leniency bias.[117] However, if objective measurement was possible, it would be difficult for many jobs to find the right measures to specify the incentives. Whilst it is clear that a salesman should be incentivised by the number of his sales, the matter is more complex for managerial jobs or even craftsmen. Here an incentive for speed or revenue might have negative effects on quality. More generally, it is difficult to pre-specify incentives for tasks, where the outcome can only be observed *ex post*. An experiment studying the effect of fixed payments versus incentive compatible payments finds that effort levels are lower under the incentive compatible condition. Moreover, when changing from incentivised to fixed payments, the effort even decreases more. Therefore it seems as if incentives change the perception of the basic principal-agent setting.[118] In the same manner too strong material incentives can be perceived as a signal of distrust, and thus they might erode the basis for successful cooperation.[119] Hence monetary incentives are important to design rules in economic ethics, but they are not the only means to incentivise behaviour.

Similar considerations apply for the profit of an organisation from the shareholder or stakeholder perspective and under the condition of blanking out or

sufficiently discounting non-monetary business benefits. So for example, it could sensibly be assumed that a company can increase its profits by 5 per cent with an infringement of moral values. Further, there could be a system of incentives which promise the responsible manager a pay increase of 10 per cent for every 1 per cent increase in the company's profits. This would mean an individual could gain a 50 per cent pay raise, whilst tolerating or overlooking some immoral behaviour. This immoral behaviour might be the deliberate introduction of an ecological hazard to the environment, maltreatment of employees, product safety violation or illegal monopolies.[120] Now assume one deals with a case of environmental damage and the natural incentive for increasing the profit margin represents ten utility units. Thus the artificially incentivised pay raise can be calculated to the equivalent of 25 utility margins. In this setting a moral incentive of more than the equivalent of 25 utility margins is necessary to guide the manager in the direction of acting rightly in the moral sense. For example, any noticeable damage to the environment could be generally sentenced with 30 utility margins or equivalently a reduction of payments by 60 per cent. In this scheme, tolerating immoral behaviour would be tied to a pay reduction and thus not accord with managerial self-interest but self-punishment. This example stresses how crucial incentive schemes are in shaping business behaviour.

Costly punishment in order ethics

Most economic theories focus on the design of appropriate rewards, but punishments are rarely considered as a parameter for design. Similarly, order ethics remains vague about the difference of rewards and punishment.[121] In fact, there is an asymmetry between both mechanisms. Behavioural economics finds that stakeholders punish others much more often than they reward.[122] Hence punishment is proven to be a very successful behavioural mechanism in governing incentives. This becomes even more evident when considering the legal system, which has always focused on punishment rather than rewards. After all, Western legislation has been quite successful with this policy. Also, from the game-theoretic perspective there is a rationale for punishment, when punishment is modelled as negative pay-off. The benefits of allowing for punishment have already been explicated in Section 3.3, where it was proven to improve cooperative behaviour and successful cooperation in a public good game. From an eudaimonistic point of view it was also shown that punishment does not only increase efficiency in various games, but it also improves the individual's perceived level of well-being.[123] On the other side, punishment or the announcement of punishment can have negative effects on the motivation and effort of workers.[124] Therefore I argue that order ethics must be aware of the potential of punishment mechanisms and also of the asymmetry of rewards and punishment, which is investigated with behavioural economics. So there is an important difference in perception of rewards and punishments. It is only up to businesses to incorporate significant penalties for disregarding moral values into their already-existing systems of incentives. The fact that the proof of moral misbehaviour might be

difficult in individual cases is a practical issue, but surely not an insurmountable problem to the idea of formulating a scheme of negative incentives to enforce moral values. Hence the rules of order ethics must not only be incentive compatible, but also carefully distinguish when to reward and when to punish. This asymmetry is found and investigated with behavioural economics and should also be considered in order ethics, when it comes to the design of incentive compatible rules. As these considerations have elucidated, bonus payments and fines are the standard practice to structure positive and negative incentives.

Non-monetary and social incentives as a constraint for order ethics

Economics is often mistakenly taken to focus only on monetary incentives. However, behavioural economics in particular not only acknowledges monetary incentives (e.g. cash rewards), but also additional individual incentives (e.g. self-esteem, future opportunities) and social incentives (e.g. recognition amongst colleagues).[125] Social incentives have already been broached in order ethics and their significance was acknowledged.[126] However, this section explains the behavioural foundations of social incentives and how these can best be put into practice for the implementation of order ethics.

First of all, non-monetary individual incentives do exist and are a useful mechanism to motivate or explain moral behaviour. For example, one powerful explanation for the distributions observed in the dictator game is social esteem.[127] As already argued, the only rational action in this game for the proposing player is to give no contribution to the other player. But as the remarks on social preferences in Chapter 5 have shown this is empirically not the case and people tend to prefer distributions approaching some equality norm. But even without some distributional norm, people might simply find that not sharing does not conform to their own self-esteem. Also future opportunities are a very valid form of incentive, which does not necessarily have to be monetary. So education in general is a prime example, which as an investment admittedly has some rationale in higher expected life earnings, but it is also an incentive for more rewarding jobs or future personal accomplishment. This proves that non-monetary incentives in various forms have to be considered when designing incentive schemes. Consequently, order ethics can benefit from accounting for this form of motivation.

With reference to behavioural economics, social incentives are an even more powerful source of human motivation.[128] The underlying social approval of a group or society is a strong behavioural mechanism driving human behaviour.[129] In fact, reciprocity as already discussed in Chapter 3 might be the most efficient solution to motivate a workforce. Experiments relying on reciprocity have brought far better results than explicit incentive schemes in terms of worker effort and efficiency.[130] Therefore the following considerations focus on how social incentives can contribute to the implementation of economic and business ethics. Compared to monetary incentives, social incentives are less efficient on the order ethics market level than they are on the organisational level. This is only natural, as on the market level most encounters are anonymous and thus

there is little opportunity for the social factors to emerge. Hence social incentives are primarily for the implementation of business ethics. Regarding the management of organisations, social incentives add a new dimension to designing structures in order to implement some desirable end. Although this field of research is still very recent within behavioural economics, first robust insights regarding their materialisation have been generated. First of all, social incentives rely on a functioning group which can trigger the individual's social preferences.[131] Moreover, when designing a social incentive the details matter. So it is shown how non-monetary awards and other merits as a general incentive mechanism must become public information and have some perceived value to significantly affect human behaviour.[132] These points corroborate that social incentives are more attuned to business ethics than to economic ethics. However, that does not diminish their importance for the general implementation of ethics in competitive markets. Furthermore, as for social preferences, social incentives are more effective in private settings such as a small organisation or a subdivision of a bigger organisation. And as a second challenge there is a complex interplay between social and monetary incentives, which can have negative consequences, if not considered carefully.

As already mentioned, the literature finds one basic problem with social incentives, i.e. the crowding out of incentives. A problem with pure economic control systems based on monetary incentives is that these can crowd out existing social motivation. By establishing an unsocial solely monetary motivational system, it is signalled that social motives are not honoured and that compensation is solely based on monetary performance.[133] This gives the employees only little chance to derive satisfaction from their job and only little opportunity to receive recognition from the meaning of their work or the social interaction. Thus in designing incentives one has to be especially careful with the adverse effect of crowding out intrinsic motivation with extrinsic incentives.[134] This is even more important as studies show that it is a very long process to re-establish social incentives, once they have been substituted and spoiled with monetary incentives.[135] In fact, it can be shown that under some conditions, it is optimal to dispense with any incentives, i.e. contracts, to achieve the best outcome with an intrinsically motivated agent.[136] Finally, there is another strong argument in favour of social incentives, i.e. the little cost for indirect control. In all monetary incentive and punishment-based schemes, a comprehensive monitoring of agents is necessary to overcome the problems of the underlying principal-agent structure. By contrast, social incentives do not rely on direct monitoring and can thus resolve the problem of conflicting interests.[137] Instead they use natural social structures and a notion of fairness, where all peers of a group are observing each other. This exerts enough control pressure to make explicit monitoring obsolete. In conclusion, order ethics must not necessarily implement social incentives, even though it could be another source for incentives, but it must be careful not to tamper with the existing social incentives.

7.3 Implementing business ethics on the basis of behavioural economics

After the discussion of economic ethics, I illustrate how the findings of this book can also be materialised for the implementation of business ethics, as based on the framework, developed in Section 7.1. First of all, moral virtues are linked with values and corporate value codes. Then prudence is taken up and related to bounded rationality to devise savings plans with reference to libertarian paternalism. Finally, responsibility and in particular its manifestation in corporate social responsibility is discussed.

7.3.1 Values and corporate value codes

Corporate value codes are a popular means for implementing business ethics. Moreover, they can be related to the cardinal moral virtues as identified in Chapter 6. Corporate value codes are also often denoted as "*value statements*" or "*company codes of ethics*".[138] They apply at the individual level, aiming to govern employees and management behaviour with a set of comprehensible virtues. The idea is to govern the moral behaviour of a company by aligning it with certain key values which are then respected by all employees. As a guideline, value codes must be explicit enough to be practical for managers in everyday situations, but also vague enough to leave some room for adjustments.[139] Even though this is often a key challenge for practical application it does not impose a conceptual challenge. In analogy to the corporate social responsibility concept it is often argued that there is a positive relation between using corporate values codes and the financial performance of a company. But the nature of this relation is still not fully understood.[140] Nevertheless, empirical evidence corroborates the increasing importance of bringing values into business ethics. Subsequently, 70 per cent of the Fortune 500 companies have corporate value statements and 90 per cent have corporate codes of conducts.[141] These popular tools represent a "nucleus of values" which is central to all business activity.[142] Moreover, according to an UK survey 82 per cent of managers would not be willing to work for a company in whose values they do not believe.[143] More generally, corporate codes of ethics are a binding mechanism to govern employee behaviour across all organisational levels. Thus the organisational values are meant to determine the individual virtues. In an extensive review of corporate codes of conduct Kapstein finds that responsibility, quality, ecology, honesty and fairness are the most frequent issues.[144] Here the basic idea for implementing business ethics is the same as in Chapter 6 only the logical direction is inverted. Whilst in Chapter 6 the focus was put on the identification of cardinal virtues of individual managers, now the organisational perspective is taken in order to find values suitable for a corporate value code. Therefore, in the following I give a short account of how the individual virtues from Chapter 6 can be adopted for this context.

As with virtues, there is a vast amount of potential corporate values, but for the sake of simplicity I omit a full list, analogous to that one in Section 6.1.[145]

Instead I pick out some of the most popular corporate values and map them with the cardinal virtues of business ethics in Table 7.3.

Considering *prudence* as a corporate value, it cannot simply be related to individual rationality, but needs to employ a wider notion as the findings from Chapter 4 have shown. Hence it can be interpreted as the common demand of excellence or corporate performance which goes along with the notion of full rationality at least. These two values suggest some optimisation criterion, but elegantly evade the exact underlying definition of rationality. In particular, they explicitly comply with bounded rationality or the various theories of satisficing. Also, autonomy is often advocated as a corporate value which relates to prudence. This becomes crucial, especially when considering bounded rationality and the doctrine of libertarian paternalism. This discussion highlights how autonomy can be restricted and yet individual benefits are maintained. Second, *justice* connects with the corporate value of fairness, but in a different sense from Chapter 6, since it is additionally concerned with compliance. Here fairness has to be considered from the stakeholder perspective, thus applying to customers, suppliers and competitors. Hence compliance and the stakeholder perspective require more fairness than the pure virtue of fairness. In particular, compliance also integrates respect of some legal framework, whereas the virtue of fairness is purely individualistic. Finally, fairness also incorporates a sense of fair competition, as it is already advocated in order ethics. Moreover, compliance is an important value for the implementation of justice. It comprises compliance with laws and regulations such as insider trading policies, monopoly and antitrust issues as well as health care and employee safety regulations. Hence compliance addresses the whole regulatory framework, which is the centre of order ethics. Next, *trust* as the virtue of honesty and trustworthiness, can be connected with the organisational values of reputation and privacy. Reputation ties in with the remarks from Section 6.2.3. However, in this context it takes a stakeholder perspective and integrates reputation as apparent to customers, suppliers and competitors.[146] As already argued with regard to economic ethics, transparency could be established as a strong supplementary value to reputation. Finally, *responsibility* can be mapped to the main values of accountability and integrity.

Table 7.3 Mapping individual virtues and corporate values

Cardinal virtues of business ethics (Chapter 6)	*Corporate values*
Prudence	• Excellence and performance • Autonomy
Justice	• Fairness • Compliance
Trust	• Reputation • Privacy
Responsibility	• Accountability • Integrity

Moreover, taking responsibility as one of the core values strongly relates the concept of corporate values to corporate social responsibility.[147] Accountability is almost an organisational synonym for responsibility which stresses the importance of making business transactions transparent and traceable. Furthermore, integrity is a powerful concept to foster individual responsibility by means of value. According to Maak, the basic elements of corporate integrity are: commitment; conduct; content; context; consistency; coherence; and continuity.[148] Hence integrity might be the most comprehensive and important value, when it comes to guiding individual managers.

7.3.2 Bounded rationality for the institutionalisation of savings plans

With regard to business ethics, individual rules are an important mechanism, which can be retraced to the works of Buchanan. Therefore, in the following, savings plans as an exemplary problem of business ethics are related to his theory of rules. Then a behavioural economics mechanism for implementing savings rates, thus increasing welfare, is presented and linked to the recent discussion on libertarian paternalism.

Buchanan subscribes to the social contract approach from the beginning.[149] In his later works, he even interprets the origin of morals as the actor's strategic interest to constrain the behaviour of others.[150] Hence situational control becomes one of his most prevailing aims. This kind of morality is especially important because many real-life exchange situations are highly complex and thus they are difficult to control and enforce.[151] In the tradition of political economy, Buchanan argues that the rules of a society have an enormous influence on individuals' behaviour. So for constitutional economics, rules are a predominant mechanism for resolving social and political problems.[152] Rules can be distinguished into rules of practice, maxims and "rules of thumb".[153] The latter class of rules builds the connection to behavioural economics, especially in the form of bounded rationality, cognitive biases and heuristics. As argued in Chapter 4, the prevailing perception of prudence or rationality in behavioural economics is that of bounded rationality. Still, rationality is an individual capability playing a role in all business decisions. Hence it is also a crucial theme for business ethics. As an example I consider savings plans which constitute a common economic decision. According to the OECD Economic Outlook in 2008 savings rates are as low as 3.3 per cent (Japan), 1.6 per cent (US) and −0.2 per cent (UK). Hence the problem of low personal savings rates is empirically evident. Consequently, I break down the main problems of individual decision making regarding savings by means of theories from bounded rationality.

Dealing with individual savings, one can distinguish some basic biases of decision making. First, there is the *overconfidence bias* which illustrates that on average people are falsely optimistic about their own judgements. So regarding savings, individuals misjudge their financial literacy and make bad decisions with long-lasting consequences. Second, the *status quo bias* represents a basic human inertia of not changing and also not stressing oneself with the future.

Hence the importance of actively enrolling in saving plans is often neglected. Next, additional problems originate from *hyperbolic discounting*, which makes savers focus too much on the present and spend money instead of investing a part of it. Based on their usually risk-averse nature they demand hyperbolic interest rates to substitute consumption for savings. However, such interest rates are not feasible according to basic economic mechanisms.[154] Finally, relating to hyperbolic discounting the problem of *self-control* needs to be considered.[155] This problem is based on the phenomenon of procrastination.[156] Accordingly, most people are unable to weigh off present and future states of well-being which makes them indecisive. A comprehensive adaptation of these general findings to the domain of savings can be found in the works of Benartzi and Thaler.[157] An aggravating factor in the problems of saving plans is that they are usually one-shot or at least very rarely repeated decisions. Thus there is little opportunity to learn about the natural behavioural biases and there is little opportunity to reverse mistakes once they have been made.

Having hallmarked the key elements constituting the problem of savings plans, a possible remedy mechanism can be discussed. It can be found in the institutionalion of savings plans in order to improve individual savings rates. One popular example, for the design and success of this concept is the idea of "save more tomorrow".[158] This plan is implemented by having companies offer savings plans where the default option for their workforce is participation. So the basic inertia and tendency for status quo maintenance is utilised for the worker's own benefit. Nevertheless their individual right to refuse participation in such a scheme is maintained. An interesting design feature of this format is that the initial savings rates then gradually increase as workers achieve pay raises. Hence the overall saving rates from the individual perspective grow exponentially. Overall, predefined saving plans with a default for participation are a striking example for how mechanisms can be changed in a mutually beneficial way. The gain here is mutually beneficial, as it decreases the effort the employer would otherwise have to take in order to provide financial security for the employee's retirement. Documenting the success of such a change of rules, Thaler and Benartzi report data from a field experiment. Here the exemplary company at hand, which had implemented the prescriptive agenda of "save more tomorrow", boosted average savings rates from 3.5 per cent to 13.6 per cent in a period of only 40 months.[159] This significantly surpasses the standard OECD rates as presented. Thus this mechanism has proven its practical success and can also be considered an appropriate means for the improvement towards savings, alleviating the individual problems caused by bounded rationality. However, this form of libertarian paternalism or "nudge policy" brings up the moral question whether active and conscious manipulation of economic decisions can be approved.[160] Here, at least for the implementation of business ethics, it can be argued that the value of liberty or autonomy is still respected. The default options are changed, but no one is forced into any decision according to the scheme presented here. Therefore people are not manipulated, but only pointed towards their true, but unknown, preferences.[161] Moreover, there seem to be no

complaints from the participants, which are guided by this economic decision making support. And finally, from the standard economic stance of efficiency, the individual workers who still voluntarily contribute to the newly designed savings plans increase their future financial well-being and support a socially efficient funding of retirement savings.

Overall, the resort to bounded rationality with respect to libertarian paternalism and savings plans shows how business ethics can benefit from implementation policies grounded in behavioural economics research. More generally, considering the design options based on bounded rationality, framing effects are another mechanism which might be auspicious.

7.3.3 Corporate governance and corporate social responsibility

In this final section, two main topics of current business ethics are related to behavioural economics. First of all, the very general and fuzzy concept of corporate governance is assessed. Then corporate social responsibility as the core discipline of business ethics in the Anglo-American tradition, implicitly based on social contract theory, is discussed.

Corporate governance

Corporate governance is a concept bringing together all stakeholders of a business.[162] Thus it is a core concept in business administration and economics, but also strongly relates to business ethics.[163] It is primarily concerned with the principal-agent problem of informational asymmetries, which all hierarchical organisations have to face. So it must deal with issues such as transparency of decisions and incentive structures. Governance in general must be based on some value system, but in contrast to corporate value codes, here the values are usually not explicitly codified. Corporate governance is becoming increasingly important, as one can observe a shift of values in management from traditional social values towards pure profit maximisation.[164] Also, governmental regulation of corporate governance by means of laws such as the Sarbanes-Oxley Act increases. For the scope of this book, efficiency and shareholder value are the two most common drivers underlying current corporate governance activity. The implementation of corporate governance can be based on three main means, i.e. the board of directors, internal control procedures and internal sanction mechanisms. The overview presented in Table 7.4 relates implementation mechanisms to the main themes of behavioural economics with regard to economic ethics and business ethics.

Cooperation, as discussed in Chapter 3, can best be implemented by internal control procedures and internal sanction mechanisms. Thus it also reflects the asymmetry of rewards and punishments as already pointed out in Section 7.2.3. Both must implement incentive structures enhancing any desirable cooperation and can be analysed by means of game theory as already demonstrated in Chapter 3. A similar argument holds for *fairness*. In contrast to cooperation

Table 7.4 Aims and mechanisms of corporate governance

	Board of directors	*Internal control procedures*	*Internal sanction mechanisms*
Cooperation (Chapter 3)		✓	✓
Rationality (Chapter 4)	✓		
Fairness (Chapter 5)		✓	✓
Virtues (Chapter 6)	✓		

fairness is not necessarily based on win-win situations but yet, as comprehensively shown in Chapter 5, there is some elementary sense of fairness even in economic transactions. Hence based on this basic fairness, control procedures or sanctioning mechanisms can promote fair behaviour. Section 5.3 in particular relates to the procedural aspect.

Finally, *rationality* and *virtues* apply to the board of directors, as they can only be targeted at individuals and not directly at the institutional level. This has already been covered in Section 7.3.1 on the implementation of corporate value codes. Of course rationality is an almost tautological requirement to a functioning board of directors. However, there are various definitions and requirements of rationality, as explicated in this book. Moreover, only virtuous directors and managers should be entrusted with the governance of any organisation. This can be a very powerful implementation mechanism, which should be in accordance with the selection of cardinal virtues for business ethics, as identified in Chapter 6. Hence managers should not only exhibit prudent decisions, but also must be just, trustworthy and responsible in all their actions.

Corporate social responsibility

Responsibility as a moral virtue has its foundation with Aristotle.[165] Taking responsibility for one's actions is an elementary aspect of social life and the underlying implicit social contract. But as with social preferences, it is only rarely pointed out explicitly. One important exception here is Gauthier, who argues that even in non-repeated games it can be advantageous to develop a sense of morality and voluntary cooperation to achieve optimal individual and collective outcomes.[166] However, the setting of a decision already has a strong moral impact. So making decisions in a group or on behalf of others is morally very different from solely deciding and acting for oneself.[167] There is an undisputable difference between individual and collective responsibility.[168] In fact, experimental evidence shows that social welfare levels are increased, if individuals have the responsibility to choose for a group. This is usually explained with risk-averse behaviour, when choosing for a collective.[169] So in experiments even risk-seeking actors are unwilling to take a risky gamble, when the pay-off from their decision is split up amongst the group. This shows that people are aware of their responsibility in a social setting and that fostering group decisions in the design of business ethics can also stipulate less risky behaviour thus

helping to prevent excessive risks. Order ethics accounts for responsibility as order responsibility on the business ethics layer.[170]

Regarding the nature of responsibility, one can also consider the current main theme of business ethics, i.e. corporate social responsibility (CSR). In the following CSR is re-emphasised from the behavioural economics perspective. Some authors have already realised the importance of responsibility for economics, separate from business ethics.[171] CSR was then taken up in the academic literature in the 1960s.[172] But the popular discussion of CSR only started some 30 years ago and ever since has gained importance in the academic literature on business ethics and for corporate practice.[173] Order ethics, too, has always been concerned with this conception.[174] Corporate social responsibility is defined as: "the firm's consideration of, and response to, issues beyond the narrow economic, technical, and legal requirements of the firm to accomplish social [and environmental] benefits along with the traditional economic gains which the firm seeks."[175] Thus it imposes a positive duty for a company to make beneficial contributions to society, beyond the company's natural end of profit maximisation and tax payment. Here it needs to be pointed out that this does not divert to a demand of altruism and that it does not necessarily involve money or donations. So for example, overproduction of clothing could be sent to developing countries free of charge, constituting a win-win situation for company and society. Thus the notion of CSR is rather open and also contains: flexible working hours; employees' family support; ecological standards; etc. Overall, CSR integrates different perspectives, such as business ethics, corporate governance, corporate citizenship and social contract theory. CSR can also be interpreted as an extension of corporate governance on the grounds of social contract theory.[176]

Since the 1970s CSR has been complemented by investigations of corporate social performance.[177] This also illustrates that CSR is always to some extent driven by corporate self-interest.[178] Overall, both financial and genuine socially benevolent motives can constitute the interest of businesses in CSR. So the acceptance of this notion of responsibility is supported by the many social activities that companies foster without any immediate financial benefit. For example, most businesses engage in some sort of sponsoring to encourage cultural or sporting undertakings. This is beneficial to society as a whole, as it facilitates forms of entertainment which would otherwise not be possible. Unfortunately, there is a problem of perception involved in these forms of behaviour, since as a matter of fact a lot of sponsoring entails reputational advantages for the benefactor. Consequently, a lot of cases of social responsibility blur with promoting public relations for business purposes. However, there are also less ambiguous examples. For instance some companies spend additional money to offer leisure or cultural courses to their employees to diversify their private knowledge and to account for their interests. Furthermore, it can be argued that responsibility has positive effects on the reputation of a business, which might then promote work productivity, as workers prefer to work for an ethincally renowned company.[179] Nevertheless, the exact connection between CSR and business profits remains unclear at present. Some early research has investigated a positive relation of

responsibility and company performance.[180] But economic analysis finds that it is very difficult to find or establish a clear causal link between profits and CSR activity.[181] This confirms that most likely the main source for corporate social responsibility is a combination of genuine moral concerns and a calculated pursuit of better reputation and higher profits.

To fully grasp this relation one also has to distinguish between the CSR effects within the scope of one company and the dynamics which develop when one company in an industry segment introduces CSR activities for the first time. If this is the case, CSR becomes a means of competitive strategy and other companies might most likely follow and imitate CSR activities solely for the purpose of protecting their market share. Hence the implementation of CSR in a competitive market setting is a critical issue, which is still subject to an intensive debate in the literature.[182] There are two opposing strands. The first position, often advocated by economists in the tradition of Friedman, argues that genuine CSR is a disadvantage to every organisation. Thus either CSR leads to bankruptcy or it must implicitly be profitable which sheds doubt on its motivations and devalues CSR to a marketing strategy. The second line of argument, from the business ethics perspective, is that there is a normative responsibility every company owes society. Following this logic, companies with active CSR involvement will outperform companies without such activities, but not on the economic basis of better publicity, but on people's recognition that the the other companies are not meeting moral standards. To comply with the demands of society as well as the need of its own sustenance in a competitive environment companies have to "balance competitive pressure with community needs".[183] Hence CSR is an important concept for the implementation of business ethics, but for a practical application it must not rely either on a company's interest or social interest only, but must find a middle ground reconciling both interests.

As the conclusions in this book drawn from behavioural economics have proven, CSR has a solid foundation. CSR not only supports society in general, but also cooperation between businesses, as it signals and commits trustworthiness in its partnerships. Also, fairness, which was identified as an integral part to both small and large scale business transactions, goes hand in hand with CSR behaviour. Even though CSR is not directly connected to individual virtues, it can take up corporate values, as discussed in Section 7.3.1. This illustrates how the behavioural foundation of cardinal business virtues derived from Chapter 6 also conveys to the implementation of business ethics by means of corporate social responsibility.

8 Conclusions and outlook

This book was motivated by the recent progress in behavioural economics and aimed at the advancement of economic ethics and business ethics by combining normative principles and empirical evidence grounded on the key motivational forces in economic decision making. Hence the main objective was to align economic ethics and business with a modern microeconomic foundation. This meant relating behavioural economics and also some elementary game theory with economic ethics and business ethics. With regard to ethical theory the focus was put on order ethics as a well-established theory, which also accounts both for an economic and a business layer.

For economic ethics, order ethics is a very popular approach closely related with economics. This book started with an assessment regarding the scope of cooperation based on game theory and some experimental evidence taken from behavioural economics. Then the impact of bounded rationality on order ethics, dispensing with instrumental or full rationality, was assessed. In addition, different conceptions of rationality, including bounded rationality, were considered in terms of their compatibility with order ethics. Fairness, as a central theme in current behavioural economics, was broken down into distributive fairness and procedural fairness and then mapped to economic ethics. This point of view departs from the neoclassical assumption of strict individual self-interest of economic agents. Then behavioural economics was employed for the analysis of a wide range of virtues, including the classical cardinal virtues, which are still prominent in current accounts of business ethics. As a result new cardinal virtues for business ethics were derived according to behavioural constraints. Finally, the overall discussion was applied to set up valuable guidelines for the implementation of economic ethics and business ethics. In the following, the main insights derived from the individual chapters are successively recapitulated.

Chapter 2 establishes the foundations for this book, i.e. on the one hand ethical theory, business ethics, economic ethics and on the other hand economics, game theory and behavioural economics. With ethical theories, the focus is put on virtue ethics, social contract theory and utilitarianism which play a crucial rule for the subsequent investigations. Then the corresponding basics of neoclassical economics are presented. Decision theory, mainly, as the basis for the rational choice paradigm, is described regarding its basic parameters, which also

substantiate economic institutions. Then the scope of normative economics is explicated, highlighting the economic understanding and reliance on welfare. On this basis the necessity of an additional theory of ethics for economics is established. Here the two layers of economic ethics and business ethics are distinguished and order ethics as a specific theory addressing both layers is introduced. This theory stands in the ethical social contract tradition and also has strong roots in the fields of neoclassical and institutional economics. Game theory and behavioural economics are presented in some detail as the main methodological pillars of this book. For game theory, a formal explanation of the core concepts is given and the field is structured according to the time dimension of games and their informational structure. Further the corresponding solution concepts are explained and the most important games for this book are presented as exemplars. Also the strong potential game theory yields for ethics in general is explicated with reference to the literature from both fields. Then the powerful framework for analysis game theory provides is transferred to order ethics. Based on game theory an introduction to behavioural economics is given. Behavioural economics combines standard game theory, social psychology and experimental economics offering a conclusive alternative to neoclassical economics. In essence behavioural economics relaxes the standard assumptions of full rationality, maximisation and strict individual self-interest. Rationality is replaced with theories of bounded rationality which accounts for actual deficiencies in human decision making, such as reference points, framing effects and cognitive biases. Similarly maximisation is put in the perspective of imperfect decisions due to limited learning, satisficing and heuristics as a more realistic decision-making procedure. Finally, self-interest is extended with an additional social dimension. Here fairness, for example, formalised as inequality aversion or reciprocity, serves as a behaviourally adequate explanation for human agency in economic contexts. Overall, behavioural economics replaces the classical Homo oeconomicus assumptions and offers a more complex but also more realistic body of theories. Accepting behavioural economics as a new central paradigm of economics also has profound ramifications for economic ethics and business ethics. Hence the reassessment of these ethical theories becomes necessary. In this regard the claim to combine normative theory and empirical economics is established as central for this book. After all, every ought implies can. Along these lines behavioural economics is applied as a state-of-the-art guide to the understanding of human capabilities with a focus on economic agency. The latter especially makes it perfectly suitable to address economic ethics and business ethics.

In *Chapter 3*, cooperation is the central theme. First it takes up ethics and in particular social contract theory. Here current movements and opportunities to use game theory as the foundation for social contracts are presented. This game theoretic rationale can be found in the concepts of reciprocity and rules, where evolutionary arguments and the idea of mutual gains are the key justification. Both rely on self-interest as a sufficient condition for cooperative behaviour. In the following, the most important static and dynamic games to study cooperation

are introduced and their analysis is explicated. This consists of the static prisoner's dilemma, the altruist dilemma, the stag hunt game, the repeated prisoner's dilemma and the iterated public good game. Finally, current order ethics is related to game theory and behavioural economics, which can pinpoint new extensions suitable to order ethics. First of all, it derives many arguments from the standard prisoner's dilemma which is only one particular static game. Even though this is sufficient to motivate the basic structure of dilemma games, more games and more complex dynamic structures are necessary to represent all real economic interactions. Also, games based on imperfect information have to be integrated for a full analysis of economic exchange. Second, strategy and equilibrium selection in order ethics should be extended. So mixed strategies facilitate more equilibriums in standard games. For the equilibrium selection, risk dominance is an important alternative to Pareto-efficiency. The reliance on Pareto-efficiency as the sole criterion for equilibrium selection precludes order ethics from finding and accounting for alternative equilibriums in various classes of games. This is particularly important, as empirically most human beings act risk-averse in economic contexts thus preferring risk-dominant strategies. Moreover, focal points can provide another criterion for equilibrium selection, which is not discussed within order ethics, yet. Third, the mechanisms of cooperation are scrutinised. So reciprocity is a very important concept guiding human behaviour. From the game-theoretic perspective reciprocity can be formalised with self-interest and conditional cooperation, which is also found in experimental games. Experiments from behavioural economics corroborate that many decisions are motivated and driven by conditional cooperation and reciprocity. This does not mean that self-interest is not a behavioural driving force or an inadequate assumption. Behavioural economics only shows that naive or strict self-interest is not sufficient to fully capture the complexities of human decision making in economic interactions. Instead self-interest is refined with the strategic dimension of game theory and accordingly conditional cooperation and reciprocity are still grounded in human self-interest, but they are more versatile. In the end this is very close to the conception of self-interest already advocated in order ethics. In order ethics incentives must essentially govern human behaviour. In this regard, the conception of cooperation based on behavioural economics only dispenses with the appeal to strict self-interest as a means to that end. Instead it introduces a form of strategic self-interest, which guides economic decision making. This strategic self-interest can also be the basis for the design of incentives as understood in order ethics. Moreover, behavioural economics demonstrates how negative incentives such as punishment can help governing collective behaviour towards equilibrium states of higher efficiency. Punishment is a mechanism already integral to order ethics, but the discussion here establishes its benefits purely on the basis of game theory. This confirms the importance of the order ethics maxim of designing rules for governing economic behaviour.

Chapter 4 deals with the central rationality assumption which is shared by both ethics and economics. So most ethical theories understand rationality as a

form of instrumental rationality, choosing the right procedures to achieve a prespecified end. By contrast, utilitarianism and neoclassical economics have a more demanding understanding of rationality as full rationality. On this account, not only are the procedures relevant, but the outcomes are used to evaluate decisions in terms of their rationality. However, as the vast literature in economics shows there are serious limitations to the concept of full rationality and it seems rather short-sighted to base a theory on such an anthropologically unrealistic foundation. Hence bounded rationality as advocated by behavioural economics is presented as an alternative modern rationality conception. It can explain many peculiarities of human behaviour, such as intertemporal discounting, decision biases, framing effects and decision heuristics. Prospect theory is one of the central concepts in this realm. Generally, order ethics can accommodate various rationality concepts and hence this chapter proceeds in aligning order ethics with bounded rationality, collective rationality and strategic rationality. For bounded rationality, it is argued that it can help improving ethical decision making. And even more importantly policymaking based on order ethics can capitalise on the various bounded rationality concepts to make markets more ethically robust. In particular it is shown by the example of the prisoner's dilemma how framing can advance the efficiency of outcome changes without changing the underlying rules and incentive structure. Then collective rationality stresses the social dimension of modern economics and dispenses with the individual focus of rationality. This notion is also compatible with order ethics and even pursues its recent application to the ethics of globalisation, where individual rationality and zero-sum games are removed with collective decision making and non-zero-sum games. Finally, strategic rationality is the conception most natural to game theory and social contract theories. Hence it is another viable extension to ground order ethics. Strategic rationality extends, foremost, the set of possible strategies and accounts for varying depths of reasoning typically observed in experiments, such as the beauty contest game. To implement this conception, only the game-theoretic foundation of order ethics must be sharpened and widened.

With *Chapter 5* the importance of economic fairness for economic ethics, i.e. order ethics, is discussed. Fairness, which is mainly synonymous with justice, has a long tradition in both ethics and economics and thus is also a natural starting point for economic ethics. In this chapter the distinction between procedural and outcome fairness is crucial. First the basic principles of justice in the ethical tradition are introduced, i.e. equality, need, merit and efficiency. This is then put in perspective with contractarian theories, most importantly with *A Theory of Justice* by Rawls. Subsequently, the economic view on fairness is presented. Although the behaviourally founded economic analysis of fairness is a relatively new field it yields some fundamental insights into human behaviour. Standard game theory does not account for fairness, but it can be utilised as a means for formalising models of social preferences. In economics, fairness can only be accommodated by extending the concept of individual preference to that of social preferences. Based on this extension, models of inequality aversion are

currently the most important stream of research. They argue that people make social comparisons and dislike strong inequalities with regard to the distribution of goods and money. So even though small individual advantages are desired in a market economy, no one wants his or her friends and neighbours to be impoverished. Similarly, procedural fairness has gained vigour in the behavioural economics literature, since the experimental evidence proves that solely distributive theories cannot fully explain human behaviour and economic decisions. Only procedural fairness can accommodate the differences in human perception regarding the intentions, the coming about and the actions of a decision as well as the final distribution. Hence it argues that against the standard views in neoclassical economics and utilitarianism, fairness must not be evaluated only on the basis of outcomes. In fact, the procedures leading to an outcome are similarly important. Here there are two important aspects. First, an allocation rule must be specified, which typically leaves a choice between markets, which includes auctions, and lotteries as the main mechanisms. In this vein, markets are usually perceived as the more efficient option whereas lotteries are taken to be unbiased and fairer. Second, there are criteria for fair procedures such as accuracy, voice and consistency. These have to be generally respected in order to institutionalise any fair procedure. Moreover, reciprocity, understood in the tradition of the "golden rule" in ancient ethics, is often a behavioural element shaping the fairness of procedures. In conclusion, there is evidence from behavioural economics that three elements shape our strategically rational economic decision making, i.e. distributive fairness, procedural fairness and yet some self-interest. Current order ethics is based on individual self-interest in the social contract tradition. Based on behavioural findings this should be adapted so that the reliance on self-interest is reduced and that reciprocity as a procedural component is integrated into the theory.

In *Chapter 6* the focus shifts from economic ethics to business ethics. In particular it assesses virtue-based business ethics with regard to theories from behavioural economics. So once again the interplay of normative and empirical insights is accomplished as the main methodology of this book. The definition of virtues in this chapter is maintained in the Aristotelian tradition. Starting with an overview of currently discussed virtues in the business ethics and general ethics literature, a list of potential virtues of business ethics is presented. Then courage, temperance, prudence, justice, trust and responsibility are identified as primary virtues for further analysis. Subsequently, each of the potential virtues of business ethics is assessed in terms of compatibility with behavioural economics and economic relevance. First, courage is found to conflict with empirically observed loss-aversion. Second, temperance is shown to be based on the outdated understanding of economies as zero-sum games and moreover it is not in line with experimental evidence regarding human capacities of self-control. Third, prudence is reinterpreted with relation to bounded rationality and due to its broad conception it is still found to be integral to any virtue ethics. Fourth, the contemporary notion of justice is reinforced with the behavioural economics models of fairness and social preferences, which makes it only more relevant to current

business ethics. Fifth, trust and the resulting concept of reputation are retraced to reciprocity in repeated games. Here trust becomes another cardinal virtue of business ethics which is also increasing economic efficiency. Finally, responsibility as a virtue is found in much of the behavioural evidence observed in laboratory settings and the omnipresent debate on corporate social responsibility stresses its relevance. Overall, the assessment puts forth prudence, justice, trust and responsibility as the cardinal virtues of modern business ethics in accordance with behavioural economics.

Chapter 7 discusses the practical implications of the previous results and employs behavioural economics for the implementation of economic ethics and business ethics. This aims at a closer match of moral norms and economic institutions. Hence different means for implementation are discussed. First with regard to economic ethics markets, institutions, rules and incentives are analysed. Markets and institutions relate to the economic theory of mechanism design, as well as efficiency and transparency, as generally desirable market features. Transparency is a prerequisite to implement perfectly fair markets. However, transparency is a concept which has not been addressed in economic ethics and order ethics so far. Hence the underlying framework must be extended with transparency for guiding an optimal implementation of institutions. Making market transactions more transparent could thus disburden incentives from being the sole force for governing behaviour. Moreover, the limitations of incomplete contracts are reconsidered in order to establish reputation formation as another valuable institution. For a good reputation moral claims and economic mechanisms are aligned. Then the materialisation of rules as incentives is outlined. In this regard it is shown how monetary incentives, costly punishment and social incentives can be applied complementarily. Punishment has been little covered in order ethics so far and social incentives are a completely new extension. Hence a broader and behaviourally sound conception of incentives is pushed forward for the implementation of order ethics. Second, for business ethics, corporate value codes, bounded rationality and corporate social responsibility are taken into account. For corporate value codes the cardinal virtues of business ethics from Chapter 6 are reconsidered and shown to be integral. However, it is found that in value statements, virtues are codified differently. Then savings plans are established as a part of individual business ethics and their implementation based on bounded rationality schemes from behavioural economics is demonstrated. This also takes up the literature on libertarian paternalism. However, even though bounded rationality is used to manipulate decisions, individual autonomy is still respected and social efficiency is improved, so that such applications of bounded rationality can generally be endorsed. Finally, corporate social responsibility is related to corporate governance. Corporate social responsibility helps to establish cooperation and fairness in business ethics. Cooperation is increased as it signals and commits trustworthiness in its partnerships. Also, fairness which was identified as an integral part to both small and large scale business transactions, goes hand in hand with responsible behaviour.

This book has, for the first time, established a relation between economic ethics and business ethics on the one hand and behavioural economics on the other hand. It has highlighted various interrelations of the two fields and argued how empirical behavioural economics can advance the normative foundations of ethics. After all, the recurrent themes of cooperation, rationality, reciprocity, fairness, virtues and implementation of ethics are affected by both ethics and economics research. Overall, this relation has re-established already proven concepts of economic ethics and business ethics on a new foundation. And it has also pointed out directions for the extension and advancement of current theory in order ethics and virtue-based business ethics. As an *outlook* on future research, the new field of neuroeconomics, based on advances in neurosciences and new methods such as fRMI, can also be related to economic ethics and business ethics. This new fRMI evidence might help to clear the remaining fuzziness in most data, which is integral to the application of social experiments. Thus it could help to bring clearer evidence and more rigour to behavioural economics. Certainly, the neuroeconomic results will also have implications on ethics.

Furthermore, the methodological advances of the social sciences such as game theory and experimental methodology should be embedded into ethical theory to a greater extent. The potential of game theory was already realised by some authors, as the works of Binmore and Gauthier illustrate. However, more research is necessary along these lines. For example, which games can best be used to model ethical interaction? And how can the various, and still increasing, equilibrium concepts best be adapted for the ethical analysis of games? Furthermore, there is yet only very little work in the sense of directly combining ethics with experimental methodology. Hence the idea of piloting a new field of experimental practical philosophy should be pursued.[1] Here the behavioural methodology could be adapted to address normative hypotheses or propositions on the basis of experimental evidence. This new approach could aptly address issues in economic ethics and business ethics.

Notes

1 Introduction, motivation and methodology

1 Adam Smith (1976, 2006).
2 Bentham (1791).
3 Anscombe (1958), p. 1.
4 Sen (1987).
5 Binmore (1989, 2006).
6 Güth and Kliemt (2010); Knobe and Nichols (2008); Ernst (2007); Schöfer (2005).
7 Frohlich *et al.* (1987); Frohlich and Oppenheimer (1992); Binmore *et al.* (2001); Bicchieri (2008).
8 Sidgwick (1981), p. 2.
9 Fehr and Schmidt (1999); Bolton and Ockenfels (2000); Cox *et al.* (2007).
10 Andreoni (1990, 1993).
11 Levine (1998); Burnham (2003); Fehr and Fischbacher (2003).
12 Cason *et al.* (2002).
13 Rabin (1993); Nelson (2002); Charness and Levine (2007); Falk *et al.* (2008).
14 Berg *et al.* (1995); Cox (2004).
15 Kahneman *et al.* (1986a).

2 Economic ethics, business ethics and behavioural economics

1 Sidgwick (1981), p. 2.
2 Timmons (2002), p. 17; cf. Anscombe (1958).
3 Aristotle (2003); Plato (2003).
4 Aristotle (2003).
5 Timmons (2002), p. 11.
6 Aquinas (2006).
7 Hobbes (2008); Locke (1988); Kant (1997).
8 Among others, Aristotle (2003); Anscombe (1958); Foot (1978).
9 Among others, Kant (1997); Rousseau (1968); Frankena (1973); Ross (2007).
10 Social contract theory and contractarianism are treated as synonyomous for the scope of this book.
11 Among others, Bentham (1791); Moore (1903); Kagan (1998); Harsanyi (1982); Sen (1987).
12 For the scope of this book the terms value and virtue are used interchangably, which is consistent with most of the respective literature. Nevertheless, please note that more specifically value is the umbrella term, which consists of anything worth having, doing or achieving (Hare (1952); Bond (1983)). Consequently, values can be specified as, for example, goods, rights and virtues (Ross (2007); Moore (1910)).
13 Aristotle (2003).

14 Aristotle (2003), 1153b.
15 These interpretations are not only guiding ethics (Parfit (1984); Annas (1993); Ross (2007)), but also inspiring economic research (Frey and Stutzer (2000)). As exposed later, this notion of value is also strongly tied to the rationality conception.
16 Williams (1985), p. 8 f.
17 Aristotle (2003), 1105b.
18 Aristotle (2003); Aquinas (2006); Goodpaster (1994), p. 54f.
19 Aristotle (2003).
20 Hume (1992).
21 Hobbes (2008).
22 Mill (1993).
23 Rousseau (1968).
24 Rawls (1971); Gauthier (1993).
25 For general modern accounts of value or virtue ethics refer to: Hartmann (1926); Anscombe (1958); Foot (1978); MacIntyre (1984). With special regard to business ethics refer to: Williams (1984); DeGeorge (1987); Nash (1990); Goodpaster (1991b); Solomon (1992b); Hartmann (1998).
26 Anscombe (1958); Foot (1978); MacIntyre (1984).
27 Foot (1978).
28 Lütge (2007), p. 97.
29 Hobbes (2008).
30 Locke (1988).
31 Rousseau (1968).
32 Dunfee and Donaldson (1995), p. 173; Donaldson (1982).
33 Dunfee and Donaldson (1995), p. 176.
34 Kant (1956, 1997).
35 Gauthier (1969, 1986, 1993).
36 See also Section 2.3.
37 Scanlon (1998), p. 153.
38 This work will become even more relevant in the discussion of distributive justice and economic fairness in Sections 5.1 and 5.2.
39 Rawls (1971).
40 Ibid.
41 Skyrms (1996); Binmore (1994, 1998).
42 Keely (1988); Williamson (1985); Donaldson and Dunfee (1994).
43 Binmore (1989, 2006).
44 Sidgwick (1981); Mill (1998); Bentham (1996).
45 Smith (2006).
46 Kagan (1998), p. 17ff.
47 Ibid., p. 17f.
48 Rawls (1971), p. 45.
49 Samuelson (1937); Harsanyi (1955).
50 Aristotle (2003).
51 Aquinas (2006).
52 Adam Smith (1976, 2006).
53 Mill (1967).
54 Buchanan (2001), p. 28.
55 An alternative view defines economics as "the study of the part of the total social system which is organized through exchanges and which deals with exchangeables." Boulding (1969), p. 4.
56 This interrelation is further outlined with a focus on behavioural economics in Section 2.3.1.
57 Samuelson (1937).
58 Binmore (1999a), p. 32.

59 Varian (2005).
60 Becker (1976).
61 As one will see later, this is a very rigid and dubious claim from the perspective of behavioural economics.
62 Buchanan and Brock (1989), p. 23.
63 Ibid., p. 24.
64 Ibid., p. 25.
65 Kolmogoroff (1933).
66 Bayes (1764).
67 Arrow (1951a).
68 Rabin and Thaler (2001).
69 Mill (1998).
70 Sen (1970).
71 Pareto-efficiency is defined as: "if a movement from an existing allocation provides more for some and at least as much for everyone else then it is to be preferred." See Pareto (1935), p. 1466f.
72 Arrow and Debreu (1954).
73 Buchanan (1975a), p. 226f.
74 Arrow (1951b).
75 Ibid.
76 Harsanyi (1955).
77 Arrow (1963).
78 Alchian and Demsetz (1972).
79 Sen (1963, 1970).
80 Becker (1993), p. 386.
81 This account has most prominently been pushed forward by Bruno Frey. For example, see Frey and Stutzer (2000).
82 Boulding (1969), p. 5.
83 Paine (2000), p. 329; Buchanan (1985), p. 14. This is taken up both in Chapter 6 on virtues and Chapter 7 about modifying economic institutions with behavioural insights.
84 Policymaking is the main implementation mechanism of normative economics.
85 Boulding (1969), p. 3.
86 Hausman (1984).
87 Harsanyi (1955, 1975, 1982).
88 Sen (1987).
89 For a comprehensive anthology of the philosophy of economics, see Hausman and McPherson (1996).
90 Homann and Blome-Drees (1992), p. 23.
91 Donaldson and Dunfee (1994), p. 257.
92 Binmore (1994, 1998).
93 Moriarty *et al.* (2010), p. 446.
94 Taeusch (1932), p. 273; Jeurissen (2000), p. 830.
95 Donaldson (1982); Werhane (1980).
96 Solomon (1992a); Vogel (1991); Maitland (1997); Whetstone (2001); Chun (2005b).
97 Ewin (1995), p. 837.
98 Solomon (2000), p. 340.
99 Ewin (1995), p. 836.
100 Jeurissen (2000).
101 Sen (1993); Paine (2000).
102 Morse (1999); King (2001).
103 Adam Smith (1976), p. 16f.; Smith (2006), p. 4f. This account of self-interest must not be confused with unrestrained selfishness. It merely stresses the motivational power of linking the success of actions to personal flourishing. For a more detailed discussion of self-interest refer to Shack (1984).

104 Vogel (1991).
105 Bertland (2009), p. 25.
106 Nussbaum (2000), p. 5.
107 Solomon (1992b), p. 139f.
108 Cavanagh *et al.* (1981), p. 399; Starck (1993); Dienhart (1995).
109 Starck (1993).
110 The idea of incentives is also crucial for economic ethics and order ethics. Please note that for economic ethics incentives are directed to companies and organisations, whereas for business ethics the incentives are aiming at individual behaviour.
111 Homann and Blome-Drees (1992), p. 116f.; Homann and Lütge (2005).
112 Rawls (1955), p. 3.
113 Buchanan (1985).
114 Homann and Blome-Drees (1992); Homann and Suchanek (2000); Homann and Lütge (2005); Pies *et al.* (2009).
115 Lütge (2007).
116 Ulrich (2007).
117 The origins of rules in ethics and economics have first explicitly been discussed in Rawls (1955).
118 Lütge (2007), p. 36.
119 Ibid., p. 47.
120 Homann and Blome-Drees (1992).
121 Ibid., p. 142.
122 Lütge (2007), p. 72f.
123 Adam Smith (1976).
124 Lütge (2007), p. 30.
125 Hume (2003).
126 Homann and Lütge (2005), p. 81.
127 Lütge (2007), p. 97.
128 Ibid., p. 101.
129 Ibid., p. 43.
130 Adam Smith (1976), p. 20.
131 Homann and Blome-Drees (1992), p. 36.
132 Lütge (2007), p. 49.
133 Homann and Suchanek (2000).
134 In practice this is often the case with environmental laws, which are much stricter in the developed economies compared to emerging countries. For a full account of moral arbitrage within order ethics, see Homann and Blome-Drees (1992), p. 116.
135 Lütge (2007), p. 45.
136 Adam Smith (1976); Lütge (2005).
137 Pies *et al.* (2009).
138 von Neumann and Morgenstern (1944).
139 Buchanan (2001), p. 31.
140 Selten (1965).
141 Simon (1956).
142 Luce and Raiffa (1957).
143 Schelling (1960).
144 Braithwaite (1955); Schelling (1968).
145 J.M. Smith (1982).
146 Rosenschein and Zlotkin (1994).
147 Axelrod (1984, 1986).
148 Camerer (1997, 2003).
149 Note that this does not necessarily mean both players are deciding, respectively moving at the same time. It rather illustrates that one player will not be informed of the opponent's decision until both decisions are disclosed simultaneously.

150 Rubinstein (1986); Abreu and Rubinstein (1988). The structure of such games is np-hard from a computational point of view.
151 Harsanyi (1967).
152 Gibbons (1992), p. 121.
153 Lewis (1969b); Aumann (1976).
154 Gibbons (1992), p. 3.
155 Nash (1951).
156 Ockenfels (2009).
157 Gibbons (1992), p. 31.
158 The concept of subgame perfection still relies on the original assumptions of the Nash equilibrium.
159 Depending on the game structure, these result in some specific equilibrium concepts such as pooling and separating equilibriums.
160 Selten (1975).
161 Please note that this does not consist of systematic departures from rationality as discussed in the literature on bounded rationality and in Section 4.2. It just introduces the possibility of mistakes for still strictly rational decision making.
162 As most qualitative conjectures about games with complete information also hold for incomplete information, I focus on the case of complete information which is easier to access and less technical in terms of the solution.
163 Gibbons (1992), p. 4.
164 Nash (1950b), p. 48.
165 Holt and Roth (2004), p. 3999.
166 Nash (1950b).
167 Schelling (1960).
168 Gibbons (1992), p. 55f.
169 Note, that this also includes the actions offside the equilibrium path in equilibrium strategies.
170 Gibbons (1992), p. 94.
171 As you can note, the first two moves of the dynamic game correspond to the matrix representation of the static game. If one has complete information here, this is an advantage for the second player, who has more information than in the static game. Nevertheless, modelling the first two moves as a dynamic game with incomplete information fully corresponds with the static game.
172 Selten (1965).
173 This is different from strucutured signalling in games, where the communication involves costs and thus is made credible and binding. See Ockenfels and Selten (2000).
174 Schelling (1960).
175 Schellenberg (1964).
176 Cf. Nash (1950a); Myerson (1979); Rubinstein (1982); Osborne and Rubinstein (1990); Binmore (1994).
177 Güth *et al.* (1982); Camerer and Thaler (1995); Brams and Taylor (1996); Fehr *et al.* (1998).
178 Axelrod (1980a); Andreoni (1990); Skyrms (2004).
179 Binmore (1994), p. 115.
180 Note that in the repeated prisoner's dilemma continous defection is still a Nash equilibrium.
181 Bolton *et al.* (2004, 2004b).
182 Myerson (1997).
183 Braithwaite (1955).
184 Schelling (1968).
185 Gintis (2004), p. 39.
186 Schelling (1960).

187 Gintis (2000a), p. xxiii.
188 Binmore (1999a), p. 34.
189 Vanderschraaf (1998); Gauthier (1969).
190 Skyrms (1996, 2004).
191 Harsanyi (1955).
192 Gauthier (1986).
193 Schelling (1968), p. 42.
194 Binmore (2004), p. 12.
195 Gauthier (1986).
196 Gauthier (1967).
197 Hume (2003), p. 153.
198 Flood (1952); Pruitt (1967).
199 Hobbes (2008).
200 Solomon (1999b), p. 12.
201 Binmore (1999a).
202 Buchanan (2001), p. 27.
203 Binmore (1999a), p. 32.
204 Binmore (2004), p, 34.
205 Axelrod (1984, 1986). This also relates to theories of evolutionary game theory.
206 Binmore (2004), p. 12.
207 Schelling (1968), p. 41.
208 For example, the Nash equilbrium in the classical prisoner's dilemma is not a Pareto-efficient distribution.
209 Braithwaite (1955), p. 8 f.
210 Binmore (1999a), p. 33.
211 Mackie (1977).
212 Axelrod (1980am 1980b).
213 Lütge (2005).
214 The focus on rules as the means for economic ethics is not only central to order ethics. It can also be found in Steinmann and Löhr (1994); Koslowski (2002).
215 Binmore (1999a), p. 33.
216 Gauthier (1986), p. 315f.
217 Sen (1987), p. 9.
218 Adam Smith (1976, 2006).
219 Sen (1987); Bruni and Sudgen (2007).
220 Especially the boundaries of the rational choice paradigm are outlined in Section 4.2.
221 Smith (2006), p. 214.
222 Kahneman and Tversky (1979).
223 Thaler (1980); Smith (2006), p. 83.
224 Thaler (1993); Thaler *et al.* (2005).
225 Camerer *et al.* (2003).
226 This is further outlined in Section 2.4.2.
227 Rabin (1998, 2002).
228 This does not mean that solely being concerned with descriptive behaviour is ideal. After all, ethics has always been the science focusing on the normative principles guiding humanity. But purely or mainly descriptive science can clear our vision and give us an accurate picture of the capabilities and limits of human beings. These, as a matter of fact, have always to be incorporated into any normative theory with the claim of applicability.
229 For an extensive account of the relation between economics and psychology, see Rabin (2002).
230 Buchanan (2001); Gintis (2000a).
231 Flood (1952); Smith (1962).

232 Kagel and Roth (1995); Loewenstein (1999).
233 Andreoni (1993); Smith (1992).
234 Camerer *et al.* (2003); Smith (2005). For an extensive discussion on the precise definition of behavioural economics refer to Tomer (2007).
235 Watson (1913); Skinner (1938).
236 Following this paradigm, I exclude issues from the philosophy of mind for the scope of this book, since these would be too specific to the subject at hand.
237 Kahneman (2003); Benhabib and Bisin (2005); Fudenberg and Levine (2006).
238 Learning is a central theme in experimental economics. For example, see Selten (1993).
239 Camerer *et al.* (2003); Smith (2005).
240 Festinger (1954).
241 Fudenberg (2006), p. 695.
242 Kahneman *et al.* (1986a).
243 Rabin (2002), p. 660.
244 Simon (1986).
245 Fehr and Schmidt (1999); Bolton and Ockenfels (2000); Fehr and Fischbacher (2002). As a technical note, it needs to be pointed out that the models of social preferences surpass the assumptions and predictions of neoclassical economics. But nevertheless, these models can still represent purely self-interested behaviour as a special case of a (non-)social preference.
246 Rabin (2002), p. 657.
247 Camerer (1997). An analogous claim is often made in the field of capital market theory and theory of finance. There the new (experimental) findings in individual decision theory under risk (most prominently by Tversky and Kahneman (1974)) give rise to the idea that all new theory of finance has to be a theory of behavioural finance.
248 Camerer (2003).
249 Rabin (1993).
250 Falk and Fischbacher (2005).
251 Camerer *et al.* (2004).
252 Binmore (1998), p. 263.
253 Rubinstein (1998).
254 Rustichini (2005); Camerer *et al.* (2005); Camerer (2007).
255 Mill (1967), p. 124.
256 Thurstone (1931). For further early experimental publications in economics, see Thrall *et al.* (1954); Davidson *et al.* (1957); Siegel and Fouraker (1960).
257 Smith (1962); Smith (1967).
258 Tversky and Kahneman (1974).
259 V.L. Smith (1976); Grether and Plott (1979).
260 Kagel and Roth (1995) for an extensive introduction into the methodology of economic experiments.
261 Hertwig and Ortmann (2001).
262 V.L. Smith (1976), p. 275.
263 Ortmann and Tichy (1999).
264 Roth (1995).
265 Kagel and Roth (1995).
266 In economic experiments instructions never contain lies, because otherwise preferences or the strategic decision-making process might be corrupted. In psychology the experiments often actively mislead their subjects. This is because of a different research focus, where often subconscious processes and general attitudes are investigated.
267 One crucial difference between economic and psychological experiments regards the repetition of experiments over various rounds to facilitate learning effects and the provision of feedback. Both are central to economic experiments.
268 Binmore (1999b).

269 Falk and Fehr (2003).
270 Siegel and Fouraker (1960); V.L. Smith (1982); Roth (1995).
271 Whilst economists insist on paying their subjects to induce incentive-compatible decisions, most psychological experiments abstain from payments.
272 Similarly, the revelation principle states that players have an incentive to reveal their type in games with incomplete information.
273 V.L. Smith (1976).
274 Loewenstein (1999), p. F29 f.
275 In the design of economic experiments it is standard practice to frame the decision makers as "Participant A" and "Participant B", rather than as buyer and seller, etc. Along the same lines the options or strategies are usually only numbered.
276 Harrison and List (2004); Levitt and List (2007).
277 Smith (1991), p. 894.
278 Roth (2002); Bolton *et al.* (2004a).
279 Loewenstein (1999).
280 Mayo (2008).
281 Sudgen (2008).
282 Duhem (1953); Quine (1953).
283 Güth *et al.* (1982); Smith (1992); Bolton and Ockenfels (2000); Camerer (2003); Fehr *et al.* (2006).
284 Bicchieri (2008), p. 229.
285 Messick and Brewer (1983), p. 40.
286 Levitt and List (2007).
287 Friedman (1970).
288 Adam Smith (1976, 2006).
289 Sen (1977).
290 Aristotle (2003).
291 Buchanan (1975a), p. 225.
292 Buchanan (1978), p. 364.
293 Güth and Ockenfels (2005).
294 Smith (1994), p. 116.
295 Homann and Suchanek (2000), pp. 24, 404f.
296 Lütge (2007), p. 36.
297 Ibid., p. 29.
298 Ibid., p. 36.
299 Binmore (1998), p. 263.
300 Schöfer (2005).
301 The design aspect of behavioural economics comes particularly evident in the new field of market design, which strongly relies on experimental economics. See Ockenfels (2009).
302 For example, in Kuhn (1970).
303 Victor and Stephens (1994); Singer (2000).
304 Rubinstein (1982), p. 97.
305 Buchanan (1971).
306 Ibid., p. 228.
307 Trevino and Weaver (1994).
308 Messick and Tenbrunsel (1996).
309 Hume (1992).
310 Analogously, Moore argues that naturalistic characteristics cannot directly affect normative claims (Moore (1903)).
311 Victor and Stephens (1994), p. 146.
312 Fehr and Fischbacher (2004), p. 185.
313 Wood (1991); Donaldson (1994), p. 165.
314 Trevino and Weaver (1994), p. 120.

315 Schelling (1968), p. 38.
316 Güth and Ockenfels (2000).
317 This adaption can for example take place as negative and positive heuristics. See Lakatos (1968).
318 A related approach can also be found in the literature on order ethics: Homann and Suchanek (2000), p. 115.
319 Frohlich and Oppenheimer (1997).
320 Hume (2003), Sec. iii, Part i.
321 This common ground of game theory and ethical theory has not yet been pointed out in the literature.
322 Bicchieri (2006).
323 Trevino and Weaver (1994).

3 Cooperation in economic ethics

1 Aristotle (2003).
2 For human beings different behaviour can be found whether the cooperation is with kin or with non-kin. In the following, I will focus on cooperation with non-kin, as this is the more general case.
3 Ellingsen and Johannesson (2008a), p. 100.
4 Hobbes (2008).
5 Adam Smith (1976), p. 19.
6 Rawls (1971), p. 105.
7 Binmore (1987, 1988, 1994, 1998).
8 Gauthier (1986).
9 Ibid.
10 This is contradictory to the approach taken by, for example, Rawls (1971).
11 Gauthier (1986).
12 Ibid., p. 13f. Gauthier does not explicitly formulate this as a business ethics concern, but that is clearly what he has in mind.
13 This approach can best be captured with the basic Nash bargaining game.
14 Stark (2009), p. 75.
15 Rawls (1971), p. 114.
16 Schelling (1956); Aumann (1959). For further works, see Siegel and Fouraker (1960); Harsanyi (1977).
17 Binmore (1994, 1998).
18 Binmore (2004), p. 6. Thereby the focus is not restricted to zero-sum games. As the public good game illustrates, both competition and cooperation can constitute non-zero-sum games, where mutual benefits can be realised along the equilibrium path. However, this book takes the position of non-cooperative game theory, where coordination is not the purpose of the game, unless it coincides with individual maximisation. Hence the conclusion can be transferred to cooperative game theory, but from the non-cooperative outset it takes a more general stance.
19 Shleifer (2004).
20 Selten (1975).
21 Rapoport (1968); Hardin (1971); Homann and Lütge (2005).
22 Binmore (1994, 1998, 1999a, 2005).
23 Binmore (1994).
24 Binmore (1996), p. 162.
25 Binmore (1999a).
26 Binmore (2005), p. ix.
27 Rabin (1993).
28 Lütge (2007: 70, 2005); Homann and Lütge (2005). Also see Buchanan and Tullock (1962); Buchanan (1975b, 2001: 29).

29 For the limitations of strict self-interest in dilemma games, see Ostrom (2010).
30 For an extensive overview on win-win solutions, see Brams and Taylor (1999).
31 A related distinction can already be found in Buchanan (1986), p. 88. There he distinguishes between short-term and long-term self-interest. Short-term self-interest roughly corresponds to the strict and unstrategic conception of self-interest, whereas long-term self-interest also accounts for strategic interaction and future events, which strongly relates to reciprocity.
32 Binmore (1994), p. 30.
33 Shleifer (2004), p. 414.
34 Sudgen (1986); Osborne and Rubinstein (1994).
35 Hurwicz (1960, 1973).
36 Sen (1987).
37 Schelling (1960).
38 Cooper *et al.* (1992).
39 Of course these remarks only apply for games without additional communication. If mutual communication is facilitated Cooper *et al.* find that the vast majority manages to collude and coordinate on the Pareto-efficient equilibrium in B, B. In that case only 4.5 per cent opt for A, A and 95.5 per cent for B, B. See Cooper *et al.* (1992).
40 Shleifer (2004), p. 414.
41 Flood (1952).
42 Luce and Raiffa (1957).
43 Buchanan (1975b); Bicchieri (1990), p. 845.
44 Schelling (1968), p. 36.
45 Homann and Blome-Drees (1992), p. 29; Homann and Lütge (2005).
46 Binmore (2004), p. 11.
47 Ross (2006), p. 55.
48 Baier (1958), p. 314f.
49 Fudenberg and Levine (1998), p. 98.
50 Simon (1993).
51 Schelling (1968), p. 37.
52 Binmore (2004), p. 15.
53 Lütge (2007), p. 60.
54 Bear in mind that the standard solution concept to dynamic games is the subgame perfect equilibrium, as compared to the classical Nash equilibrium in static games. See Section 2.3.
55 Another game with a similar structure which is also widely discussed is the centipede game. See Rosenthal (1981); McKelvey and Palfrey (1992).
56 Aumann (1959).
57 Axelrod (1984), p. 110f.
58 Dawes (1980).
59 This benefit can be formalised by the concept of social preferences, which will be outlined in some more detail in Chapter 5.
60 Kreps and Wilson (1982).
61 Hardin (1971).
62 Casari and Luini (2009).
63 Fehr and Gächter (2000).
64 Lütge (2007), p. 97.
65 Homann and Blome-Drees (1992), p. 47.
66 Homann and Suchanek (2000), p. 5.
67 Homann (2002). This is a conviction shared with Buchanan (1975b).
68 Lütge (2007), p. 57f. Already Homann and Suchanek considered some alternative games in their work, but restricted the focus of alternatives to dilemma structures (Homann and Suchanek (2000), p. 35f.). Moreover, these works have sufficed with static games and not explicitly discussed the implications of dynamic games.

69 Whereas Homann and Lütge (2005) only focus on one particular pay-off structure, Lütge (2007) discusses the general normal form of the prisoner's dilemma for a universal pay-off structure.
70 Pies (2009), p. 3f.
71 In the recent work on order ethics, Lütge (2007) points out that repeated games are implicity based on sanctions and thus are already compatible with order ethics. But a more thorough analaysis is omitted in his works.
72 Lütge (2007), p. 95.
73 Ibid., p. 41.
74 Shubik (1959), p. 171.
75 This problem is also related to the impossibility of specifying complete contracts.
76 Lütge (2007), p. 40.
77 A short remark on focal points from the order ethics perspective can also be found in Homann and Suchanek (2000), p. 105f.
78 Selten (1975).
79 Fehr and Schmidt (1999); Bolton and Ockenfels (2000); Binmore (2006).
80 Tabellini (2008).
81 For the time being, it is sufficient to know that human beings often deviate from the equilibrium strategies determined by strict self-interests. The most prominent example is the dictator game, where almost everyone violates the game-theoretic prediction and shows some concerns of social fairness even towards complete and anonymous strangers. This is a clear and well-established violation of the strict self-interest assumption.
82 Tabellini (2008), p. 905.
83 Lütge (2005).
84 Lütge (2007), p. 95.
85 Adam Smith (1976), p. 477.
86 Lütge (2005).
87 Sen (1992a), p. 91ff.; Binmore (1998), p. 59ff.
88 Shleifer (2004), p. 414.
89 Hume (1992).
90 Fehr *et al.* (2002).
91 For example Thales stated the golden rule as "If we never do ourselves what we blame in others" (Laertius (1853), p. 19). This is also discussed in order ethics. See Homann and Blome-Drees (1992), p. 15.
92 Gintis (2000b).
93 Fehr and Fischbacher (2004), p. 186; Homann and Blome-Drees (1992), p. 14.
94 Bicchieri (2008), p. 230.
95 In the behavioural economics literature differences between direct and indirect as well as positive and negative reciprocity are currently discussed. See Gächter and Fehr (2000); Fehr and Fischbacher (2002); Falk and Fischbacher (2005).
96 Sobel (2005), p. 392f.
97 Note that face-to-face as well as computer-mediated communication increases cooperative behaviour in experimental settings. See Bicchieri and Lev-On (2007).
98 Glaeser *et al.* (2000).
99 Ostrom *et al.* (1992); Fehr and Gächter (2000).
100 Fehr and Gächter (2000).
101 Camerer and Fehr (2006).
102 Fischbacher *et al.* (2001).
103 Casari and Luini (2009).
104 Fehr *et al.* (2005).
105 Brandts and Charness (2003).
106 Bicchieri (1990), p. 839.
107 Ibid., p. 845.
108 Cooper *et al.* (1996).

4 Rationality in economic ethics

1 Broadly speaking, in moral philosophy one group is advocating a narrow notion of rationality along the lines of Descartes, Bentham, Mill and Hayek. The opposition is following Hume and Smith with their broader conception.
2 Plato (2003); Aristotle (2003).
3 Haidt (2001).
4 Sen (1997), p. 745.
5 Smith (2007); Nida-Rümelin (2005); Simon (1986).
6 From an economic perspective this is the monotony assumption of utility functions.
7 Descartes (1968, 1993).
8 Hume (1992).
9 Ibid., p. 235.
10 Kant (1956).
11 Kant (1997).
12 Hobbes (2008); Hume (2003).
13 Rousseau (1968); Kant (1997).
14 Hayek (1973), p. 8.
15 Bicchieri (1987), p. 502.
16 In fact, it can be argued that rationality is the core assumption of all utilitarian theories.
17 Likewise order ethics only focuses on actions and consequences as morally relevant dimensions.
18 Harsanyi (1978), p. 223.
19 Kraus and Coleman (1987), p. 716.
20 Smith (2005), p. 136.
21 Broome (2005).
22 Camerer and Fehr (2006), p. 47.
23 Becker (1962), p. 1.
24 Harsanyi (1955).
25 von Neumann and Morgenstern (1944); Savage (1954).
26 Harsanyi (1978).
27 Savage (1954).
28 Harsanyi (1978), p. 223.
29 Ibid., p. 225.
30 Binmore (1994), p. 304.
31 Adam Smith (1976).
32 Mill (1967), p. 121.
33 Mill (1846), p. 566.
34 Simon (1955), p. 99.
35 Nozick (1993).
36 Samuelson (1947); Arrow and Debreu (1954).
37 Binmore (1987, 1988).
38 Lichtenstein and Slovic (1971); Slovic and Lichtenstein (1983); Tversky and Thaler (1990).
39 Allais (1953).
40 Smith (1991), p. 884.
41 Buchanan (1994), p. 76.
42 List (2002).
43 Kahneman (1994).
44 Tversky and Kahneman (1981, 1986).
45 The most popular example for this effect in the literature is the "Asian Disease". Here, in one treatment the situation focuses on the lives which can be saved. Accordingly there is the choice between saving 200 lives or having a 33 per cent chance of

saving 600 people. In the other treatment the lost lives are presented to the decision maker. Thus he/she can choose between either that 400 people die or there is a 66 per cent chance that 600 people will die. Statistically speaking all four options yield the same outcome with regard to the number of saved lifes. However, experimentally it is shown that in the "saving lifes" frame people prefer the first option of saving 200 people for sure (*c*.75 per cent). In the second framing, most people prefer the second risky option (*c*.80 per cent). See Tversky and Kahneman (1981).

46 Kahneman and Tversky (1979).
47 Kahneman (2003), p. 1459.
48 Bertrand *et al.* (2005).
49 Siegel (1959); Edwards (1961).
50 Here the most popular example is the characterisation of Linda. Linda is a 31-year-old female with a university degree, very eloquent and was active in a peace movement. Based on this description people are asked to order some statements about Linda according to their likelihood. In the according list the two critical items are "Linda is a bank teller" and "Linda is a bank teller and in the feminist movement". According to the laws of probability the first statement must have the same or higher probability than the conjoint second one. But allured by the description, the majority of people ranks the second statement as more likely and thus commits the conjunction fallacy (see Tversky and Kahneman (1983)). This effect is also robust for high degrees of education and in particular for business and economics students, who are trained to know statistics and to decide on a fully rational basis.
51 Aristotle even developed a system to categorise the most common syllogistic fallacies. (Aristotle (2007)). Naturalistic fallacies, as a special case, have been discussed by Moore. He points out the following prime example: (i) all dogs are mortal, (ii) Socrates is mortal, (conclusion): Socrates is a dog. See Moore (1903).
52 Ellison (2006), p. 142.
53 Sen (1997), p. 746.
54 The ultimatum game is an experiment where two persons are allocated to the role of the proposer P and the receiver R. P can then divide an amount of €*n* between him and R. In response, R can choose whether he accepts the offer for both player or rejects. In this game there is a great deviation between game theoretic prediction and experimental evidence, which clearly indicates a natural concern for fairness. As a predecessor of ultimatum games social psychologists had already devised so-called reward allocation games: see Shapiro (1975).
55 In experimental games, this is typically €1.
56 Aristotle (2003), book v.
57 Güth *et al.* (1982); Güth (1995); Kagel *et al.* (1996); Henrich (2000).
58 Güth and Kliemt (2004b), p. 365.
59 Aumann (1997), p. 2.
60 Tversky and Kahneman (1986), p. 254.
61 Tversky and Kahneman (1986).
62 Ibid.
63 Smith (2007).
64 Festinger (1957).
65 Simon (1955).
66 For a general overview on bounded rationality, see Rubinstein (1998); Ellison (2006).
67 Simon (1955), p. 99; McFadden (2004).
68 Hogarth and Reder (1987), p. vii.
69 Kahneman (2003).
70 Rubinstein (1998).
71 Simon (1955), p. 106.
72 Ibid., p. 99.

73 Simon (1956), p. 271.
74 Rubinstein (1998).
75 Simon (1955), p. 101.
76 Binmore (2005), p. 75.
77 Camerer (1997), p. 167.
78 Camerer (1997, 2003). A related, but less popular approach can be found in Colman's theory of "pychological game theory", which fully neglects the standard assumptions of rational choice and standard game theory. See Colman (2003).
79 Kahneman (2003), p. 1451.
80 Selten (1998b), p. 414.
81 Thaler (1988).
82 Kahneman *et al.* (1991).
83 Laibson (1997).
84 Ibid.; Loewenstein and Prelec (1992); Thaler (1981).
85 Loewenstein (1988).
86 Benartzi and Thaler (1995).
87 Langer and Weber (2008).
88 Benartzi and Thaler (1999).
89 Thaler and Shefrin (1981).
90 O'Donoghue and Rabin (1999); Ariely and Wertenbroch (2002).
91 Hayek (1976: 20, 1945). A similar position is argued by Luhmann (1980) who stresses the importance of using rules to reduce the complexity of everyday life.
92 Tversky and Kahneman (1974).
93 Gigerenzer (1996).
94 Gigerenzer and Selten (2001).
95 Simon (1955).
96 Simon (1957, 1985).
97 Selten (1998a).
98 Güth and Kliemt (2004b), p. 373ff.
99 Simon (1955), p. 104.
100 Smith (1991), p. 894.
101 Fudenberg and Kreps (1988). Later on extended models of bounded rationality incorporating social learning have also been proposed. See Ellison and Fudenberg (1993, 1995).
102 Roth and Erev (1995); Erev and Roth (1998).
103 Nelson (2008).
104 Fudenberg and Levine (1998).
105 Güth and Kliemt (2004a); Güth *et al.* (2008).
106 Tversky and Kahneman (1974).
107 Kahneman and Tversky (1979).
108 Smith (2006), p. 214.
109 Kahneman and Tversky (1979); Tversky and Kahneman (1986), p. 255.
110 Thaler (1980).
111 Ibid.
112 In biology a similar effect can be found with animals defending their caves. Even though they do not have a concept of possession or legal entitlement, the animals which have obtained the cave first by some natural coincidence, value the cave higher and defend it more callously than any attacking animal. Thus most animals are able to defend their caves, due to some endowment effect. See Stake (2004).
113 Smith (2006), p. 214.
114 Aumann (1997), p. 3.
115 Schelling (1968), p. 38.
116 Kraus and Coleman (1987), p. 715.
117 Gauthier (1986).

118 Mackie (1977).
119 Kant (1956); Smith (2006).
120 Lütge (2007). Another short treatise of this relationship can also be found in: Homann and Suchanek (2000).
121 Lütge (2007), p. 40f. More generally, also refer to Homann and Suchanek (2000), p. 416 f.
122 Simon (1955), p. 99.
123 Simon (1978), p. 9.
124 Selten (1998b).
125 Donaldson and Dunfee (1994), p. 256.
126 Dane and Pratt (2007).
127 Ernst (2007), p. 497.
128 Bertland (2009), p. 27.
129 Donaldson and Dunfee (1994), p. 260.
130 Selten (1998a); Bendor *et al.* (2001); Ahlert (2007).
131 Güth *et al.* (2008); Fellner *et al.* (2009).
132 Donaldson and Dunfee (1994), p. 257.
133 Gauthier (1986). There is still some criticism directed at the applicability of constrained maximisation in the ethics literature. For one antagonist, see Franssen (1994).
134 Thaler and Shefrin (1981).
135 Arrow and Kurz (1970).
136 Brennan (2007), p. 260.
137 Ramsey (1928).
138 Brennan (2007), p. 264.
139 Schokkaert and Overlaet (1989), p. 23.
140 Thaler (1980).
141 McCusker and Carnevale (1994).
142 Kern and Chugh (2009).
143 Pruitt (1967), p. 23f.; Pincus and Bixenstine (1977); Fleishman (1988). Similar effects can also be found in the more recent experimental economics literature, which replicate the framing effects for public good games. Cf. Sonnemans *et al.* (1998); Cookson (2000).
144 For experimental evidence, see Andreoni and Miller (1993); Cooper *et al.* (1996). For the proof of the unique Nash equilibrium in pure strategies with backwards induction, see Kreps and Wilson (1982).
145 Broome (2008); Gauthier (1986).
146 Aumann (1992).
147 Sudgen (1991).
148 See in detail Sen (1977).
149 Binmore (2005), p. 66.
150 Harsanyi (1953, 1955, 1977).
151 Gintis (2004).
152 Arrow (1987), p. 201.
153 Homann and Lütge (2005).
154 Lütge (2007).
155 Bicchieri (1987).
156 Bicchieri (1990), p. 838.
157 Ibid., p. 840.
158 Bicchieri (2004).
159 Binmore (1994), p. 27.
160 The beauty contest game is known as a standard guessing game, which is often played in collaboration with newspapers. It is a static one-shot game, where a player has to choose a number from the interval 0 to 100. Then the pay-off is determined,

such that the player who was closest to 75 per cent of the average guess wins a price. Hence, if all players were perfectly rational and had n-depth reasoning, they would guess 0. Nevertheless, all other choices <75 can be rational. This only depends on the player's expectations about the other players' reasoning.

161 Nagel (1995); Duffy and Nagel (1997).
162 Gauthier (1986).
163 Ibid.

5 Fairness in economic ethics

1 Barry (1989); Konow (2001); Miller (1999b); Michelbach *et al.* (2003), p. 524.
2 Aristotle (2003), 1131af.
3 Cohen (1989).
4 Aristotle (2003), 1130bf.
5 Locke (1988), p. 292f.
6 Rescher (1966).
7 Sen (1992b).
8 Boulding (1962).
9 Miller (1999b), p. 66.
10 Rawls (1971), p. 73 f.
11 Nozick (1974); Okun (1975); Hayek (1976).
12 Friedman (1962); Locke (1988).
13 Nozick (1974); Hayek (1976).
14 Rawls (1971), p. 36.
15 Dworkin (1981).
16 Elster (1992).
17 For example, cf. Walzer (1983).
18 Elster (1989a), p. 103.
19 Andreoni and Miller (2002); Charness and Rabin (2002).
20 Konow (2000); Cherry *et al.* (2002).
21 Schokkaert and Overlaet (1989).
22 Walzer (1983).
23 Miller (1999a); Pogge (2002).
24 Rawls (1971).
25 Rawls (1958, 1964, 1971, 1993).
26 Rawls (1971), p. 1.
27 Ibid., p. 303f.
28 Rawls (1993).
29 Arrow (1973).
30 Frohlich *et al.* (1987); Frohlich and Oppenheimer (1992). For a more recent analysis also see Konow (2003).
31 The other two options were a maximum income or specifying a range contraint.
32 Binmore *et al.* (2001); Fehr *et al.* (2006).
33 Rawls (1964), p. 9f.
34 Shupp and Schmitt (2008).
35 Binmore (1998).
36 Laden (1991).
37 Nozick (1974); Gauthier (1986). Nozick's libertarian work strongly promotes the political philosophy of Locke (1988) and takes up the basic ideas of Kantian deontology.
38 Binmore (1994).
39 Walzer (1983).
40 Ibid., p. 282.
41 Thaler and Sunstein (2003).

42 For a similar research approach, see Bicchieri (2006).
43 Adam Smith (1976, 2006); Buchanan (1985).
44 Schokkaert and Overlaet (1989), p. 19.; Miller (1992), p. 555.
45 Konow (2003), p. 1189.
46 Binmore (2004), p. 15.
47 Sen (1979).
48 Elster (1995); Miller (1999b).
49 Note, for example, Rawls's early work "Justice as Fairness". It shows how obsolete such a distinction is, because both concepts are very fuzzy and are not exclusive to either discipline. See Rawls (1958).
50 At the same time, first psychological investigations have started exploring the preferences of fairness. See Messick and Sentis (1979).
51 Varian (1974).
52 For overviews on the theme of distributive justice, see Rescher (1966); Barry (1989).
53 Kahneman *et al.* (1986a), p. 285.
54 Kahneman *et al.* (1986a).
55 These models have only been developed and discussed on the basis of a few groundbreaking publications in the 1990s. See Prasnikar and Roth (1992); Forsythe *et al.* (1994); Kagel *et al.* (1996); Fehr and Schmidt (1999); Bolton and Ockenfels (2000).
56 Croson and Konow (2009), p. 201.
57 Nevertheless, some economists try to incorporate pure altruism or as a weaker form some self-motivated warm-glow altruism into the body of economic theory. See Andreoni (1990); Simon (1993); Levine (1998).
58 Roemer (1986), p. 88.
59 Cf. Braithwaite (1955); Gauthier (1986); Yaari and Bar-Hillel (1984); Binmore (1994).
60 Harsanyi (1975); Howe and Roemer (1981); Binmore (1989).
61 Harsanyi (1977).
62 Binmore (1994, 1998, 2005).
63 Rabin (1993).
64 Ibid., p. 1282.
65 Ibid., p. 1288.
66 Nelson (2001).
67 Engelmann and Strobel (2004). Please note that they define efficiency not as Pareto-efficiency but as surplus maximisation.
68 Sobel (2005), p. 392.
69 Yaari and Bar-Hillel (1984); Kahneman *et al.* (1986a), p. 287ff.
70 Bicchieri (2008), p. 234.
71 Fehr and Gächter (2000).
72 Kahneman *et al.* (1986b), p. 728.
73 Bicchieri (2004), p. 183.
74 Gintis (2006), p. 7f.
75 Bolton and Ockenfels (2000); Fehr and Schmidt (1999).
76 Charness and Rabin (2002).
77 Andreoni and Miller (2002).
78 Berg *et al.* (1995); Fehr and Gächter (2000); Cox (2004); Cox and Deck (2006); Cox *et al.* (2007).
79 Ostrom (2000).
80 Fehr and Fischbacher (2002), p. C1.
81 Scott *et al.* (2001); Konow (2000, 2001).
82 Konow (2003), p. 1189.
83 Ellingsen and Johannesson (2008a).
84 Alexander and Skyrms (1999).

85 Alexander (2000).
86 Binmore (1998), p. 218.
87 Binmore (2005).
88 Binmore (1998).
89 Gintis (2000a, 2009).
90 The exact attitudes toward inequity can differ depending on the social background, education or culture. See Shiller *et al.* (1991); Elster (1992). Hence the conception as presented here can only be restrained to the Western capitalist societies.
91 Dworkin (1981), p. 293.
92 Dworkin (1981).
93 Bolton and Ockenfels (2000).
94 Fehr and Schmidt (1999).
95 D. Lewis (1969).
96 Simon (1993).
97 Bicchieri (2006).
98 Bicchieri and Xiao (2009), p. 193.
99 Sen (1997), p. 748.
100 Bicchieri and Xiao (2009).
101 Nydegger and Owen (1974).
102 Camerer and Thaler (1995), p. 215.
103 Brenner and Vriend (2006).
104 Falk *et al.* (2003).
105 Güth *et al.* (1982).
106 Rotemberg (2008).
107 Henrich (2000); Oosterbeek *et al.* (2004).
108 Miller (2002).
109 Oosterbeek *et al.* (2004).
110 Bicchieri (2008), p. 229.
111 Prasnikar and Roth (1992).
112 For evidence on the three-player ultimatum game, cf. Knez and Camerer (1994) and Güth *et al.* (2007).
113 Forsythe *et al.* (1994).
114 Croson and Konow (2009).
115 Hoffman *et al.* (1996); Burnham (2003).
116 Gauthier (1986), p. 181.
117 Bolton and Ockenfels (2000).
118 Croson and Konow (2009).
119 Kahneman *et al.* (1986a, 1986b).
120 Adam Smith (1976).
121 Buchanan (2001), p. 29.
122 Lütge (2005).
123 Aristotle (2003), 1130b.
124 Sen and Willams (1982); Sen (1997).
125 Thibault and Walker (1975).
126 Knaster (1946).
127 Rawls (1971), p. 75.
128 Nozick (1974), p. 149f.
129 Varian (1975), p. 224.
130 Alexander and Ruderman (1987).
131 Donaldson and Dunfee (1994), p. 260.
132 Anand (2001).
133 Bolton *et al.* (2005).
134 Gneezy (2005), p. 392.
135 McCabe *et al.* (2003).

136 Messick *et al.* (1985); Mikula *et al.* (1990).
137 Tyler (2000).
138 Anand (2001); Kim and Mauborgne (1998).
139 Falk *et al.* (2008).
140 Tyler (2000).
141 Kahneman *et al.* (1986a), p. 287.
142 Sondak and Tyler (2007), p. 84.
143 Bolton *et al.* (2005).
144 Elster (1989b).
145 Bolton *et al.* (2005); Bies *et al.* (1993).
146 Fehr *et al.* (1993); Oberholer-Gee *et al.* (1997).
147 Dolan *et al.* (2007). Furthermore, neutrality, reversibility and transparency are also discussed in the literature.
148 Schneider and Krämer (2004), p. 508.
149 Fehr and Gächter (2000), p. 159.
150 Hume (1992).
151 Smith (2006), p. 226.
152 Ghiselin (2009).
153 Gibbard (1991).
154 Piaget (1962), p. 170.
155 Gauthier (1986), p. 1ff.
156 Binmore (1996), p. 161.
157 Güth and Yaari (1992); Bowles and Gintis (2004).
158 Fehr and Fischbacher (2002), p. C13.
159 Axelrod (1984).
160 Axelrod (1980a).
161 Bicchieri and Xiao (2009).
162 Bicchieri (1990), p. 840f.
163 Berg *et al.* (1995).
164 Falk and Fischbacher (2005).
165 Cialdini (1993).
166 Fehr and Schmidt (1999); Bolton and Ockenfels (2000).
167 Dufwenberg and Kirchsteiger (2004).
168 Hoffman *et al.* (1996).
169 Berg *et al.* (1995).
170 Charness and Rabin (2002).
171 Croson and Konow (2009).
172 Gintis (2006), p. 17.
173 Fehr and Gächter (1998); Bowles and Gintis (2004).
174 Piaget (1962), p. 227.
175 Moorman (1991).
176 Eek *et al.* (1998).
177 Smith (1991), p. 883.
178 Fehr and Schmidt (1999); Bolton and Ockenfels (2000).
179 Harsanyi (1977); Binmore (1994, 1998). From an order ethics perspective, empathy is useful to increase efficiency by means of better cooperation. Hence it is pivotal to maintaining the natural propensity for empathy. Cf. Lütge (2007), p. 234.
180 Brams *et al.* (2001).
181 Okun (1975); Hsu *et al.* (2008).
182 Fehr *et al.* (2006).
183 Lütge (2007), p. 45; Suchanek (2001).
184 Lütge (2007), p. 44. Nevertheless Homann (2003) acknowledges the evidence from experimental economics, showing that economic agency does not solely rest on strict self-interest, but rather on social or moral preferences.

185 Fehr and Fischbacher (2002), p. C4.
186 Smith (1991), p. 880f.
187 The results are robust against strategies like last-minute bidding in second price auctions, which are not consistent with game-theoretical predictions. See Roth and Ockenfels (2002).
188 Lütge (2007), p. 240.
189 Gielissen *et al.* (2009).
190 Kahneman *et al.* (1986b).
191 Tabellini (2008), p. 906.
192 Hsu *et al.* (2008).
193 Bolton *et al.* (2005), p. 1071f.
194 Nelson (2002); Falk *et al.* (2003).
195 Gale *et al.* (1995).
196 Vanberg (2008b).
197 Sutter and Kocher (2007).
198 Piaget (1962); Kohlberg (1971).
199 Homann and Lütge (2005), p. 87.
200 Alternatively, an opportunity of one party to renegotiate renders complete contracts impossible. See Sobel (2005), p. 414.
201 Fehr and Gächter (2000), p. 169.
202 Falk *et al.* (2008).
203 Homann and Lütge (2005), p. 91.
204 Charness and Levine (2007).
205 Croson and Konow (2009).

6 Business ethics based on virtues and behavioural economics

1 Aristotle (2003), 1153b.
2 Aristotle (2003), 1153bf.
3 Sidgwick (1892), p. 34.
4 Williams (1985), p. 8f.
5 DeGeorge (2006), p. 52.
6 Aristotle (2003), 1103a; MacIntyre (1984), p. 191.
7 Bond (1983); C.I. Lewis (1969), p. 93.
8 Aristotle (2003), 1105b.
9 Broadie (1991), p. 57.
10 MacIntyre (1984).
11 Ewin (1995), p. 834.
12 Homann and Lütge (2005).
13 Hume (1992).
14 Louden (1984), p. 230.
15 Annas (1993), p. 250.
16 Sen (1997), p. 762. The fruit passing game is a dynamic, two-player game with common knowledge. The point of the game is to select a fruit from a basket which contains one mango and two apples. The set of actions available to the players encompasses taking the mango, taking an apple or passing the basket. Without reference to social norms, passing is not an intelligible option, as every player would just choose his favourite fruit according to his stable preference. However, accounting for social norms it is unacceptable to choose the last fruit of a kind, unless the other player has already chosen a fruit. So if both players preferred the mango, the standard game theoretic solution would be that the first player would take the mango and the second would be left without a fruit. With social norms the game would end in an infinte regress of courteous passing.
17 Homann and Lütge (2005), p. 87.

18 Ewin (1995); Maitland (1997); Solomon (1999a); Whetstone (2001); Chun (2005b); Bertland (2009).
19 Solomon (1992b), p. 145.
20 Lütge (2007), p. 94.
21 Ibid., p. 95.
22 Ibid., p. 96 f; Foot (1978), p. 89f.
23 cf. Homann (2003), p. 18f.
24 cf. Paine (2000), p. 329.
25 cf. Solomon (1992b).
26 Ibid.
27 DeGaray (1995), p. 88.
28 Rusthon (2002), p. 138.
29 Roman *et al.* (1999); Vogel (2005); Nelling and Webb (2008).
30 Hosmer (1995); Drake and Schlachter (2008); Melé (2008); Weisband (2009).
31 Graafland (2009).
32 Louden (1984), p. 235.
33 Friedman (1970).
34 Adam Smith (1976, 2006).
35 Buchanan (1985); Goldman (1980).
36 Smith (2006).
37 Adam Smith (1976, 2006).
38 Solomon (2003) who expands on this idea.
39 Bertland (2009); Whetstone (2001); Shaw (1997); Ewin (1995).
40 Vranceanu (2005).
41 Smith (2006).
42 Fehr and Fischbacher (2002).
43 Foot (2001).
44 Aristotle (2003).
45 In fact Aristotle gives the following list of virtues: courage; temperance; justice; truthfulness; modesty; liberty; magnificence; magnanimity; ambition; friendliness; righteous indignation; and "wittiness" (Greek: *eutrapelos*). See Aristotle (2003), book ii. However, there are numerous lists of ethical virtues and cardinal virtues in the literature, all varying to some degree.
46 Annas (1993).
47 Anscombe (1958); Foot (1978); MacIntyre (1984).
48 Foot (1978).
49 Nussbaum (2006), p. 76ff.
50 Plato (2003); Aristotle (2003).
51 Foot (1978); Nussbaum (2006), p. 76ff.; Solomon (1999a).
52 It is especially important for most deontological approaches to ethics. For example, see Kant (1997).
53 Coase (1937).
54 For ethical accounting refer to Dano and Swift (2003) and for corporate governance see Freemann and William (1990); Roberts (2001).
55 Sztompka (2000); Tomkins and Passey (2000).
56 Solomon (1992a).
57 Goodpaster (1983); Flores and Johnson (1983); Davies (2004).
58 Singer (2000), p. 194f.
59 Aristotle (2003).
60 Slovic (1964).
61 Rabin and Thaler (2001).
62 In fact, according to prospect theory the behaviour is risk-averse for gains, and risk-seeking for losses. However, for the sake of simplicity I will focus on the more important aspect of deciding about gains. Please note that considering risk inclina-

tions, risk-neutrality is still unrealistic and the arguments for risk-aversion can be adapted for risk-proclivity analogously.

63 Kahneman and Tversky (1979).
64 Aristotle (2003).
65 For the problem of savings rates and savings behaviour also refer to Section 7.3.2 for more details and some empirical evidence.
66 Ariely and Wertenbroch (2002).
67 Brennan (2007).
68 Laibson (1997); Loewenstein and Prelec (1992); Thaler (1981).
69 Here, "rational" is based on the assumption of purely monetary consequences and some standard credit interest rate, in this case this rate must be <10 per cent, which is a reasonable assumption.
70 Lütge (2007).
71 Aristotle (2003), 1140a.
72 This interpretation stems from the famous *Wealth of Nations* quote:

> It is not from the benevolence of the butcher the brewer, or the baker that we expect our dinner, but from their regard to their own interest. We address ourselves, not to their humanity, but to their self-love, and never talk to them of our own necessities, but of their advantages.
>
> Adam Smith (1976)

73 Lütge (2005).
74 Gauthier (1986).
75 Remember the remarks on instrumental rationality from Chapter 4.
76 Kahneman (2003); Rubinstein (1998).
77 Simon (1986).
78 Aristotle (2003).
79 Locke (1838); Bentham (1791).
80 Smith (2006).
81 Smith (2006); Buchanan (1985); Adam Smith (1976).
82 Following this distinction, in this chapter the term justice relates to ethical theories, whereas fairness relates to economics and behavioral economics.
83 Kahneman *et al.* (1986a).
84 Rawls (1971).
85 Rawls (1964), p. 6f.
86 Adam Smith (1976).
87 Lütge (2007), p. 74.
88 Kahneman *et al.* (1986a), p. 286.
89 Maitland (1997), p. 23.
90 The details of these models have already been delinated in Section 5.2.
91 Binmore (1989); Howe and Roemer (1981); Harsanyi (1975).
92 Binmore (2005, 1998, 1994).
93 Konow (2003); Michelbach *et al.* (2003); Frohlich and Oppenheimer (1992).
94 Rabin (1993).
95 Falk *et al.* (2008). In fact, models of social preferences usually try to explain behaviour observed in various economic experiments.
96 Andreoni and Miller (2002); Charness and Rabin (2002).
97 Cherry *et al.* (2002); Konow (2000).
98 Schokkaert and Overlaet (1989).
99 The exact attitudes toward inequity can differ depending on social background, education or culture.
100 Note that within the management literature the question of justice is sometimes broken down into: distributive justice, administrative justice and compensation justice; see Cavanagh *et al.* (1981), p. 366.

101 Kahneman *et al.* (1986a), p. 285. Locating fairness aspirations in human nature predominates in the literature in behavioural economics. So virtually all experiments rule out learning as an explanation for fair behaviour. This breaks with the Humean tradition, which has always emphasised the importance of justice but presumed it to be a matter of education and not a natural human trait. See Hume (1992).
102 For example, demanding interest for one's personal profit was a condemned practice for a long time. So from Aristotle to the Middle Ages interest has alwayse been perceived as immoral usury. Only with Adam Smith and economics becoming an independent discipline has interest been established as a commonly accepted part of commerce.
103 Vogel (1991), p. 111.
104 Of course, there are other motivations to running a business for example independence, self-fulfilment or family tradition. But these cannot constitute a motivation to a radical capitalist.
105 Again this is an argument going back to the very foundation of economics in the works of Adam Smith (1976).
106 Wolff (1962); Cunningham (1967); Lütge (2005); Lütge (2007).
107 In fact there are various theories, but they are all based on the Capital Asset Pricing Model, which was devised by Markowitz in 1952 (q.v.). They determine the risk measure "beta" by means of correlation analysis of all related assets, which are traded in a market.
108 Carver (1925), p. 473.
109 Aristotle (2003), 1094b.
110 Smith (2006), p. 87.
111 MacIntyre (1988), Rawls (1971).
112 Aristotle (2003).
113 Hobbes (2008).
114 Hume (1992), p. 522.
115 Deming (1994), p. viii.
116 Hosmer (1995), p. 383f.
117 Arrow (1972), p, 357.
118 Sen (1993), p. 49.
119 Hirsch (1978), p. 78.
120 Wieland (2004), p. 18.
121 Hare (1981).
122 Maitland (1997), p. 23; Lütge (2005), p. 114.
123 Bohnet and Zeckhauser (2004b).
124 Smith (1978), p. 538f.
125 Cf. Sobel (2005); Falk and Fischbacher (2005); Dufwenberg and Kirchsteiger (2004); Fehr and Gächter (2000). Most games studying trust focus on a design with two players establishing trust. But recently more complex games investigating the effects of trust and reciprocity for more players have been studied. See Cox (2004).
126 However, tit-for-tat is not the best strategy in the repeated prisoner's dilemma, as it is sometimes claimed. The success of a strategy depends strongly on the original structure of evolutionary games, and mixed strategies are on average the most successful ones. Nevertheless, tit-for-tat is often one element of winning mixed strategies.
127 Axelrod (1986).
128 Kugler *et al.* (2007).
129 Arrow (1972); Fehr *et al.* (1998); Gneezy and List (2006).
130 See Sobel (1985). This argument also applies to markets with imperfect information. See also Kreps and Wilson (1982).
131 Bolton *et al.* (2004b).
132 Chun (2005a); Swift (2001).

133 Fombrun (1996), p. 97.
134 Luhmann (1980), p. 4.
135 Fombrun (1996).
136 Fombrun and Shanley (1990).
137 Schwab (1996), p. 499.
138 Luhmann (1980), p. 43.
139 Aristotle (2003), 1109bf. Cf. Irwin (1980); Meyer (1993).
140 Feinberg (1968); French (1972); Flores and Johnson (1983).
141 Kahneman *et al.* (1986a), p. 285f.
142 See, for example, Cason and Mui (1997).
143 For the normal form of the stag hunt refer to Table 3.4.
144 Charness and Jackson (2009).
145 Friedman (1962).
146 Newton (1992), p. 360.
147 Ewin (1995), p. 841.
148 Vogel (1991), p. 117.
149 Hosseini and Brenner (1992), p. 112.
150 Frederick *et al.* (1992), p. 141.
151 Vogel (1991), p. 117.
152 Rodgers and Gago (2004), p. 359.
153 Sen (1993); Paine (2000).
154 Jones (1999).
155 Kant (1997).
156 Reynierse *et al.* (2000), p. 15.
157 Hobbes (2008).
158 Lütge (2007).
159 Vogel (1991), p. 102.
160 Oliver (1999), p. 147.
161 Nystrom (1990).
162 Donaldson (1996), p. 49.
163 Henrich (2000).
164 Donaldson (1982), p. 49f.
165 Singer (2004), p. 14f.
166 DeGeorge (1993); Cavanagh *et al.* (1981).
167 Donaldson (1996), p. 51.
168 Frederick (1992), p. 288.
169 Roman *et al.* (1999).

7 Implementing economic ethics and business ethics

1 Ross (2006), p. 54.
2 Kraus and Coleman (1987), p. 722.
3 Velasquez (1992), p. 1.
4 Sterba (1995), p. 6. Also refer to: Sterba (2005).
5 Buchanan (1978), p. 364.
6 Lütge (2008).
7 Lütge (2007), p. 95.
8 Homann and Lütge (2005), p. 27f.; Homann and Blome-Drees (1992), p. 36.
9 Homann and Suchanek (2000), p. 221; Homann and Blome-Drees (1992), p. 35.
10 Homann and Lütge (2005), p. 86f.; Homann and Suchanek (2000), p. 124f.
11 For reputation and trust, see Homann and Lütge (2005), p. 110; Homann and Suchanek (2000), p. 354. For incentives, see Homann and Lütge (2005), p. 30; Homann and Suchanek (2000), p. 66.
12 Homann and Blome-Drees (1992), p. 169f; Pies *et al.* (2009).

13 Homann and Suchanek (2000), p. 409f.; Homann (1993), p. 37; Homann and Blome-Drees (1992), p. 131f.
14 Homann and Suchanek (2000), p. 35; Homann and Blome-Drees (1992).
15 Lütge (2007), p. 61.
16 Lütge (2007), p. 95.
17 Elster (1989a), p. 104.
18 Sudgen (1986).
19 Friedman (1962), p. 15.
20 Varian (1975), p. 239.
21 Homann and Lütge (2005), p. 85.
22 Hume (2003), p. 153.
23 Homann and Lütge (2005), p. 73f.; cf. Lütge (2007).
24 Buchanan (1994), p. 128.
25 As an alternative account Shleifer broaches the three means for implementing economic ethics, i.e. long-run market pressure, moral suasion and government regulation. Moreover, he points out that the latter two are particularly efficient in developed economies (Shleifer (2004), p. 417f). As the approach of moral suasion has already been implicity treated in Chapter 6 on virtue-based business ethics, I focus on the approach of government regulation, i.e. incentive-based rules, in the course of this chapter.
26 Lütge (2007), p. 44.
27 Ibid., p. 47.
28 Ibid., p. vii.
29 Offerman *et al.* (1996); Bohnet and Zeckhauser (2004a); Charness and Dufwenberg (2006).
30 Fehr and Fischbacher (2004).
31 Fehr *et al.* (2002).
32 Ockenfels (2009).
33 Boulding (1969).
34 Whetstone (2001), p. 106.
35 Homann and Lütge (2005), p. 79.
36 Please note that the demarcations in this figure remain fuzzy and are only simplified. For example cake-cutting mechanisms follow a strict economic protocol and yet in addition they belong to the institution of incomplete contracts, as contracts are usually the means to formalise and implement a specific cake-cutting mechanism in a particular context.
37 However, as founded in communist thinking there might be alternative meta-institutions taking governance by politicians as the most central distribution mechanism, but these are excluded for the scope of this book. Contrasted to markets this mechanism is not free and not economically efficient. Moreover, it can only to some extent be addressed by economic theory, as it does not rely on empirical patterns which can be analysed, but on the decisions of a very few human decision makers.
38 Smith (1991), p. 881.
39 Frey and Bohnet (1995).
40 Binmore (2004), p. 14.
41 Trevino and Youngblood (1990); Tenbrunsel (1998); Ashkanasy *et al.* (2006).
42 This economic logic is based on the game theoretic Bertrand model of price competition in an oligopolistic market with homogenous goods.
43 Hurwicz (1960).
44 Hurwicz (1973).
45 Myerson (1979). Related to incentive compatibility, the revelation principle states that in games of incomplete information there always exists an equilibrium where the players truthfully report their player type.

46 Note in the case where incentives are used to reveal specific information it is also often referred to as the revelation principle. In addition, it can be shown that given some general conditions, all auction mechanisms theoretically yield the same reveune. See Myerson (1981).
47 See Vickrey (1961). Please note that on eBay a slightly modified mechanism is used, where the winner pays the second hightest bid plus some small increment. However, this modification does not affect the equilibrium analysis.
48 Binmore (1998).
49 Bergemann and Morris (2005).
50 Binmore (2004), p. 20f.
51 Offerman *et al.* (1996).
52 Buchanan (1965), p. 9f.
53 Buchanan (1965).
54 Buchanan and Tullock (1962).
55 Fama (1970, 1965).
56 Hayek (1945). Formally, this also relates to the revelation principle in mechanism design.
57 The research field of prediction markets is based on the fundamental function of markets as information aggregation mechanism. It uses the market concept to elicit probability distributions for future events.
58 Thaler (1993); Shiller (2003); Thaler *et al.* (2005).
59 Kraus and Coleman (1987), p. 717.
60 Buchanan (1985).
61 The works of Bruno Frey, for example, point in this direction. Moreover, from a macroeconomic perspective, currently a research team built around the two Nobel laureates Amartya Sen and Joseph Stiglitz, is developing an indicator along these lines, which is meant to overcome the limitations of measuring growth solely in terms of the GDP.
62 Plato (2003).
63 Bloomfield and O'Hara (2000). A similar analysis can be found in the seminal analysis of the market for lemons by Akerlof (1970), where intransparency wins through and at the same time inevitably deteriorates the market's efficiency.
64 Brown *et al.* (2004), p. 747.
65 Homann and Lütge (2005), p. 85.
66 Lütge (2007), p. 47.
67 Lütge (2007), p. 48.
68 Hart and Moore (1988); Tirole (1999).
69 Binmore (2004), p. 23.
70 Homann and Lütge (2005), p. 87.
71 Ben-Ner and Putterman (2009).
72 Luhmann (1980).
73 Arrow (1972, 1974).
74 Hausman and McPherson (1993), p. 684. For an extensive account of trust also refer to Ripperger (1998).
75 Ben-Ner and Putterman (2009).
76 Kahneman *et al.* (1986b), p. 736.
77 Plato (1987).
78 Hume (2003), p. 155.
79 cf. Binmore (2004), p. 29.
80 cf. Morris (1999), p. 88.
81 Post and Griffin (1997), p. 165.
82 Lütge (2008); Homann and Suchanek (2000), p. 354.
83 Homann and Lütge (2005), p. 110.
84 Kreps and Wilson (1982).

85 A first game theoretic treatment of the morality of trust can be found in Güth and Kliemt (1994).
86 Kreps (1990).
87 Charness and Dufwenberg (2006).
88 See Bolton *et al.* (2004a) for a detailed analysis of this game.
89 Resnick and Zeckhauser (2002).
90 Wilson (1995).
91 cf. Section 2.3.
92 Rigdon *et al.* (2006). They show that in random assignements only 20 per cent of players cooperate, but that matching trustworthy types increases cooperation levels to 60 per cent. Moreover, this cooperation is then evolutionarily stable against the addition of untrustworthy defectors to the group.
93 Camerer (2003); Bolton *et al.* (2004a).
94 Kreps (1990).
95 Gibbons (1992), p. 55.
96 Tabellini (2008), p. 941.
97 Sobel (2005), p. 392f.
98 McCabe *et al.* (2003).
99 Bicchieri (1990), p. 846.
100 Bolton *et al.* (2004b), p. 186.
101 Ibid., p. 195.
102 Vanberg (2008a).
103 Piaget (1962), p. 170.
104 Gneezy (2005), p. 385.
105 Sen (1997), p. 747.
106 Ben-Ner and Putterman (2009).
107 Bicchieri and Lev-On (2007).
108 Glaeser *et al.* (2000).
109 Lütge (2007), p. 55; Homann and Suchanek (2000), p. 66.
110 Homann and Lütge (2005).
111 Anderhub *et al.* (2002).
112 Baker *et al.* (1988).
113 Ibid., p. 594.
114 Ibid., p. 599.
115 Deci (1971, 1972); Hammer (1975); Deci and Ryan (1985); Prendergast (1999); Tabellini (2008).
116 Baker *et al.* (1988).
117 Prendergast (1999).
118 Irlenbusch and Sliwka (2005); Fehr *et al.* (2002).
119 This is also formally shown by Herold (2010).
120 Quintessentially, it can be any violation of the moral values, which is usually discussed in light of the triple bottom line approach to corporate social responsibility.
121 Lütge (2007).
122 Croson and Konow (2009).
123 Brandts and Rivas (2009).
124 Fehr and Gächter (2001).
125 Baker *et al.* (1988), p. 595.
126 Homann and Suchanek (2000), p. 62.
127 Andreoni and Bernheim (2009). Social esteem relates to the concept of social preferences as discussed in Chapter 5.
128 Ellingsen and Johannesson (2008b).
129 Fehr and Falk (2002).
130 Fehr and Gächter (2000), p. 173.
131 Camerer and Fehr (2006).

132 Neckermann and Frey (2008).
133 Ellingsen and Johannesson (2008b).
134 Deci and Ryan (1985); Gneezy and Rustichini (2000b).
135 Gneezy and Rustichini (2000a).
136 Grepperud and Pedersen (2006).
137 Sliwka (2007); Falk and Kosfeld (2006).
138 For value statements refer to Reynierse *et al.* (2000); Webley (1999). For codes of ethics refer to Tucker *et al.* (1999); Schwartz (2002). Codes of ethics are also often denoted as "codes of conduct".
139 Donaldson (1996), p. 52.
140 Paine (2000), p. 319.
141 Donaldson (1996), p. 51.
142 DeGaray (1995), p. 88.
143 Rusthon (2002), p. 138.
144 Kapstein (2004).
145 For an extensive overview on corporate values refer to Fisher and Lovell (2009).
146 A similar approach can already be found in Homann and Suchanek (2000), p. 352.
147 Davies (2004).
148 Maak (2008).
149 Buchanan and Tullock (1962).
150 Buchanan (1994), p. 66ff.
151 Ibid., p. 71.
152 Buchanan (1975b).
153 Rawls (1955), p. 25.
154 Market interest rates only work in an exponential manner and can at most be increased by a risk factor, such as the beta coefficient in the captial asset pricing model accounting for systematic market risks. See Ross (1977); Sharpe (1964).
155 Thaler and Shefrin (1981).
156 Ariely and Wertenbroch (2002); O'Donoghue and Rabin (1999).
157 Benartzi and Thaler (2007).
158 Thaler and Benartzi (2004).
159 Ibid.
160 Thaler and Sunstein (2003).
161 Choi *et al.* (2003). However, the conception of libertarian paternalism strictly contradicts the original conception of classical liberalism, as for example found in John Stuart Mill's argument that governments must not interfere with individual liberties. SeeMill (1977).
162 Freemann and William (1990); Shleifer and Vishny (1997); Turnbull (2002).
163 Tirole (2001); Goodpaster (1991a); Roberts (2001).
164 Lichtenstein and Dade (2007).
165 Irwin (1980); Meyer (1993).
166 Gauthier (1986).
167 Buchanan and Brock (1989).
168 French (1972); Feinberg (1968); Flores and Johnson (1983).
169 Charness and Jackson (2009).
170 Beckmann and Pies (2007).
171 Clark (1916).
172 Davis (1960). Also see Heald (1957).
173 Davis (1973); Goodpaster (1983); Wood (1991); Carroll (1999); Brown (2005).
174 See Homann and Blome-Drees (1992), p. 169f. who already discussed social responsibility. For a more recent account which is more aligned with the current theme of corporate social responsibility, see Pies *et al.* (2009).
175 Davis (1973), p. 312.
176 Sacconi (2006, 2007).

177 Davis (1973); Carroll (1979).
178 Moon (2001).
179 Drecker (1991).
180 Sen (1993); Paine (2000).
181 Nelling and Webb (2008).
182 Porter and Kramer (2006); Mackey *et al.* (2007).
183 Frederick *et al.* (1992), p. 141.

8 Conclusions and outlook

1 There is already a movement pioneering experimental philosophy (see Knobe and Nichols (2008)). This has until now, however, focused on the branch of theoretical philosophy, hence there is still much potential for experimental ethics and in particular experimental business ethics as well as experimental economic ethics.

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